

Gc
974.8
Sw2p
1502863

GENEALOGY COLLECTION

ALLEN COUNTY PUBLIC LIBRARY



3 1833 01202 8749



Digitized by the Internet Archive
in 2015

PROGRESSIVE PENNSYLVANIA

A RECORD OF THE

REMARKABLE INDUSTRIAL DEVELOPMENT OF THE KEYSTONE STATE,

WITH

SOME ACCOUNT OF ITS EARLY AND ITS LATER
TRANSPORTATION SYSTEMS, ITS EARLY
SETTLERS, AND ITS PROMINENT MEN.

BY

JAMES M. SWANK,

SECRETARY AND GENERAL MANAGER OF THE AMERICAN IRON AND STEEL ASSOCIATION FOR
THIRTY-SIX YEARS, FROM 1872 TO 1908. AUTHOR OF A HISTORY OF THE MANUFACTURE OF IRON IN ALL AGES AND OF OTHER HISTORICAL PUBLICATIONS.

Remember the days of old; consider the years of many generations; ask thy father
and he will shew thee; thy elders and they will tell thee.—Deuteronomy, xxxii. 7.
I have considered the days of old, the years of ancient times.—Psalms, lxxvii. 5.

PHILADELPHIA :

J. B. LIPPINCOTT COMPANY.

1908.

Entered, according to Act of Congress, in the year 1908,

BY JAMES M. SWANK,

In the office of the Librarian of Congress, at Washington.

Printed by
J. B. Lippincott Co.
The Washington Square Press,
Philadelphia.

PREFACE.

THIS volume contains my final contribution to the industrial history of our country and particularly of my native State. My long connection with the work of the American Iron and Steel Association has made me acquainted with many important facts relating to the industrial development of Pennsylvania, including its systems of transportation, which are not to be found in any of the accepted histories of the State but which are abundantly worthy of preservation. These I have recorded in the following pages. In the arrangement of these facts I have conceived it to be necessary to present first a background of the leading incidents in the early history of Pennsylvania. In compiling these incidents I have given prominence to some features of the early history of the province which in my opinion deserve wider recognition than they have received. These include the presence of settlers on the Delaware long before the granting of Penn's charter; the text of important parts of the charter itself; the people who settled Pennsylvania after the granting of the charter, including the large number of redemptioners; the existence of negro slavery in Pennsylvania and when and by whom the agitation for its abolition was set on foot; the text of the act providing for this abolition, a much overrated measure; the cause of the estrangement of the peaceful Delaware Indians; the physical characteristics of Pennsylvania; and the animal life of the province. After the presentation of these and other features of the early history of Pennsylvania I have passed to the means of transportation that were employed by the pioneers and by those who came after them—the early roads, flatboats, keel boats, ferries, bridges, turnpikes, canals, steamboats, and railroads, and these details are followed by several chapters which deal with the great productive industries of the State. Included in these chapters I have given the early history of Pittsburgh, Pennsylvania's industrial centre and the world's industrial wonder. The prominence of Pennsylvania as the leading industrial State of the Union is presented in connection with some account of the leading industries of the whole country. A chronological chapter follows which gives a record of many notable industrial events in the history of both the State and the country. This chapter really embodies a vast amount of information the value of which would have justified its presentation in more elaborate form. The book closes with a number of chapters that are devoted to biographical sketches of some eminent Pennsylvanians, most of whom have been prominently identified with the history and development of Western Pennsylvania, and some of whom have not been honored by their fellow citizens as they have deserved.

This volume deals with exact statements. My long familiarity with the compilation and analysis of industrial statistics has impressed me with the value of statistical methods in the presentation of historical facts. Hence in the preparation of this volume my aim has been first to secure exact information upon such subjects as were deemed worthy

of consideration and next to present this information in a form as condensed as possible and always in logical and chronological order. Necessarily at the outset severe limitations had to be placed upon the subjects to be treated. The book was not intended to be in any sense a history of Pennsylvania—not even an exhaustive history of its leading industries. The purpose and scope of the book are fully stated in the title-page. Such important subjects as the military history of Pennsylvania and the history of its schools of learning, all of which shed lustre on the whole history of the State, have been passed over because they were not really essential to the proof of the proposition that Pennsylvania is a great industrial and every way progressive State.

In selecting the subjects to be considered in this volume our iron and steel industries, the greatest of all the manufacturing industries of the State, have received special attention. In dealing with this subject I have made free use of my previous historical investigations, particularly as they are recorded in *Iron in All Ages*. I have done this not only because that antiquarian volume is but little known to the present generation, making appropriate the reproduction of such of its leading facts as relate to Pennsylvania, but because some of the historical facts which it records must necessarily be republished in condensed form if later details which bring the record of the iron and steel achievements of the Commonwealth down to the present time are to possess their full significance.

In "Authorities Consulted" I have given credit to the large number of historical and statistical publications that have helped me in the preparation of this volume, quoting freely, with proper credit, from some and but slightly if at all from others. The treasures of the library of the Historical Society of Pennsylvania and of other Philadelphia libraries have been generously opened for my examination. I am also indebted to many friends for letters containing historical data of great value. A General Index and a Personal Index will assist the reader in his search for any particular information.

As would naturally be supposed by the reader, the utmost pains have been taken to prevent the insertion in the following pages of any errors affecting dates, proper names, or other historical details. If any such errors should be observed, or any serious omissions of historical facts, the blame can not be laid to haste in composition. It is simply impossible in a work which embraces thousands of names and thousands of dates that every one should be correctly given. In the preparation of the copy for the book and in the proof-reading I have had the benefit of valuable suggestions and other help from every member of my clerical staff, an obligation which I cheerfully acknowledge. The tail-piece illustrations are reproduced from pen and ink sketches by Miss Anna M. Wirth, all but one being original studies. My thanks are due to the J. B. Lippincott Company for the excellent manner in which the book has been printed and bound.

J. M. S.

AUTHORITIES CONSULTED.

- The Life of William Penn. By Samuel M. Janney. 1852.
William Penn. By Augustus C. Buell. 1904.
Life of John Heckewelder. By the Rev. Edward Rondthaler. 1847.
Washington and the West. By Archer Butler Hulbert. 1905.
Washington After the Revolution. By William S. Baker. 1892.
An Account of the Remarkable Occurrences in the Life and Travels of
Colonel James Smith. 1799.
Journal of William Maclay. 1789-1791. 1890.
Memorial of Thomas Potts, Junior. By Mrs. Thomas Potts James. 1874.
Historical Collections of the State of Pennsylvania. Sherman Day. 1843.
Early History of Western Pennsylvania and the West. I. D. Rupp. 1846.
A Gazetteer of the State of Pennsylvania. By Thomas F. Gordon. 1832.
The Dutch and Quaker Colonies in America. By John Fiske. 1901.
The Making of Pennsylvania. By Sydney George Fisher. 1896.
Pennsylvania, Colony and Commonwealth. By Sydney George Fisher. 1897.
The Story of the Palatines. By Sanford H. Cobb. 1897.
Two Centuries of Pennsylvania History. By Isaac Sharpless. 1900.
A Quaker Experiment in Government. By Isaac Sharpless. 1902.
Continental Sketches of Distinguished Pennsylvanians. By D. R. B. Nevin.
Pennsylvania Dutch and Other Essays. By Phebe Earle Gibbons. 1882.
The Germans in Colonial Times. By Lucy Forney Bittinger. 1901.
German Religious Life in Colonial Times. By Lucy Forney Bittinger. 1906.
The Huguenot Emigration to America. By Charles W. Baird, D.D. 1885.
Memorials of the Huguenots in America. By Rev. A. Stapleton. 1901.
The German Sectarians of Pennsylvania. By Julius Friedrich Sachse. 1895.
The Fatherland. By Julius Friedrich Sachse. 1897.
German Emigration to America. By Rev. Henry Eyster Jacobs, D.D.,
LL.D. 1898.
German Exodus to England in 1709. By Frank Ried Diffenderffer. 1897.
German Immigration into Pennsylvania. Frank Ried Diffenderffer. 1900.
The Frontier Forts of Pennsylvania. 1899.
The German and Swiss Settlements of Colonial Pennsylvania. By Oscar
Kuhns. 1901.
Recollections of Persons and Places in the West. By H. M. Brackenridge.
The Revolutionary Movement in Pennsylvania. By Charles H. Lincoln.
The Old National Road. By Archer Butler Hulbert. 1901.
Historic Highways of America. By Archer Butler Hulbert. 1904.
The Ohio River. By Archer Butler Hulbert. 1906.
History of The People of the United States. By John Bach McMaster.
Pennsylvania. Pioneer and State. By Albert S. Bolles, Ph.D., LL.D. 1899.
Annals of Philadelphia and Pennsylvania. By John F. Watson. 1857.
Old Redstone. By Joseph Smith, D.D. 1854.
Pioneer Outline History of Northwestern Pennsylvania. By W. J. Mc-
Knight, M.D. 1905.
History of American Manufactures. By J. Leander Bishop, M.D. 1861.
Iron In All Ages. By James M. Swank. 1892.

- Pennsylvania, Colonial and Federal. By Howard M. Jenkins. 1903.
 Hazard's Gazetteer of Pennsylvania.
 History of Pennsylvania. By Robert Proud. 1798.
 History of Pennsylvania. By William H. Egle.
 Presbyterian Centenary Memorial. Pittsburgh. 1876.
 The Moravian Manual. By Rev. E. De Schweinitz. 1859.
 A History of Bethlehem, Pa. By Bishop Joseph Mortimer Levering. 1903.
 History of Braddock's Expedition. Edited by Winthrop Sargent. 1855.
 The Old Northwest. By B. H. Hinsdale, Ph.D. 1898.
 American Animals. By Stone and Cram. 1902.
 Mammals of Pennsylvania and New Jersey. By Samuel N. Rhoads. 1903.
 The Olden Time. By Neville B. Craig. 1846.
 History of Pittsburgh. By Neville B. Craig. 1851.
 The French in the Allegheny Valley. By T. J. Chapman. 1887.
 Old Pittsburgh Days. By T. J. Chapman. 1900.
 Pennsylvania and the Centennial Exhibition. Official Report. 1878.
 Old Westmoreland. By Edgar W. Hassler. 1900.
 History of the County of Westmoreland. By George Dallas Albert. 1882.
 History of Westmoreland County. By John N. Boucher. 1906.
 The Scotch-Irish. By Charles A. Hanna. 1902.
 The Scotch-Irish in America. Scotch-Irish Society of America.
 History of Somerset County. By William Welfley. 1906.
 Diary of David Zeisberger. Edited by Eugene F. Bliss. 1885.
 Fort Pitt. By Wm. M. Darlington. 1892.
 History of the Pennsylvania Railroad Company. By W. B. Wilson. 1895.
 Fiftieth Anniversary of the Pennsylvania Railroad Company. 1896.
 The Monongahela of Old. By James Veech.
 Old and New Monongahela. By John S. Van Voorhis, A.M., M.D. 1893.
 The Old Pike. A History of the National Road. By T. B. Searight. 1894.
 The Oil Regions of Pennsylvania. By William Wright. 1865.
 State Book of Pennsylvania. By Thomas H. Burrowes. 1847.
 Historical Sketch of the Baltimore and Ohio Railroad. 1853.
 Canals and Railroads of the United States. By Henry S. Tanner. 1840.
 Tunneling. By Henry S. Drinker. 1878.
 Transportation Systems in the United States. By J. L. Ringwalt. 1888.
 History of American Steam Navigation. By John H. Morrison. 1903.
 History of the Lumber Industry of America. By James E. Defebaugh.
 History of Fayette County. By Franklin Ellis. 1882.
 History of Crawford County. 1888.
 History of Bedford, Somerset, and Fulton Counties. 1884.
 History of Cambria County. By Henry Wilson Storey. 1907.
 History of Bucks County. By William W. H. Davis. 1905.
 Cyclopædia of Indiana and Armstrong Counties. 1891.
 Essays and Speeches of Jeremiah S. Black. By Chauncey F. Black. 1886.
 Historical and Biographical Sketches. By Samuel W. Pennypacker. 1883.
 The Settlement of Germantown. By Samuel W. Pennypacker. 1899.
 Year Books of the Pennsylvania Society. By Barr Ferree.
 The St. Clair Papers. By William Henry Smith. 1882.
 Andrew Carnegie. The Man and His Work. By Barnard Alderson. 1902.
 Reports of the United States Geological Survey.
 Reports of the United States Census.
 And many others.

CONTENTS.

CHAPTER	PAGE
1. The Lack of Civic Pride in Pennsylvania.....	1
2. The Founding of Pennsylvania.....	11
3. The People Who Settled Pennsylvania.....	26
4. Redemptioners and Other Bonded Servants.....	43
5. Negro Slavery in Pennsylvania.....	54
6. The Delaware Indians.....	70
7. Physical Characteristics of Pennsylvania.....	75
8. Animal Life in Pennsylvania.....	88
9. Buffaloes in Pennsylvania.....	96
10. Early Transportation in Pennsylvania.....	102
11. Early Navigation in Pennsylvania.....	114
12. Early Steamboats in Pennsylvania.....	124
13. Early Canals in Pennsylvania.....	130
14. The Building of the Pennsylvania Canal.....	139
15. The Pennsylvania Canal in Operation.....	149
16. Early Railroads in the United States.....	156
17. Early Railroads in Pennsylvania.....	165
18. The Great Industries of Pennsylvania.....	174
19. The Early Iron Industry of Pennsylvania.....	185
20. The Manufacture of Iron and Steel Rails.....	202
21. Cornwall and Other Iron Ores.....	216
22. Coal and Coke in Pennsylvania.....	224
23. Industries Developed by Pennsylvanians.....	229
24. Industries Created by Pennsylvanians.....	240
25. Early Chain and Wire Bridges.....	248
26. The Early History of Pittsburgh.....	255
27. Chronological Record of Important Events.....	267
28. The Muhlenberg Family of Pennsylvania.....	289
29. General Arthur St. Clair.....	298
30. Albert Gallatin.....	312
31. A Man of Letters.....	316
32. Two Men from Somerset.....	331
33. A Champion of Protection.....	342
34. Other Noted Western Pennsylvanians.....	349



PROGRESSIVE PENNSYLVANIA.

CHAPTER I.

THE LACK OF CIVIC PRIDE IN PENNSYLVANIA.

PROMINENT Pennsylvanians have repeatedly and forcibly called attention to the lack of civic pride in Pennsylvania, and they have had good reason for their criticism. It has been truthfully said that we even neglect to claim for our military heroes the honors that are their due. The winter at Valley Forge, which marked the supreme crisis of the Revolution, and the battle of Gettysburg, which determined the fate of the Southern Confederacy, are events in the history of Pennsylvania to which its people might point with greater pride than they do. The achievements of eminent Pennsylvanians in war and in peace are not taught to the children of the State in their school-books or commemorated to any considerable extent in monuments, or statues, or bronze tablets, so that the present generation of Pennsylvanians and succeeding generations may be reminded of the deeds of these great men and be inspired to noble deeds themselves. The story of the founding of Pennsylvania by that great man, William Penn, is inadequately told in our school histories. The geography and the history of Pennsylvania are so imperfectly taught in our schools and colleges that many Pennsylvanians who are supposed to be liberally educated do not know how many capitals the State has had or where and when the important battle of Bushy Run was fought. It is not, therefore, to be wondered at that a Philadelphia newspaper writer not long ago said that York, Pennsylvania, is farther away from Baltimore than Philadelphia. Yet York is one of the oldest and one of the most noted cities in the State. The Continental Congress sat at York for nine months during the Revolution, from September 30, 1777, to June 27, 1778, and two signers of the Declaration died

and are buried there, Philip Livingston, of New York, and James Smith, of Pennsylvania.

The pioneer settlers of Pennsylvania endured many hardships and privations, but their sacrifices and services are not conspicuously recognized in our day. Only in a mild way do we observe the scriptural injunction: "Remember the days of old; consider the years of many generations; ask thy father and he will shew thee, thy elders and they will tell thee." The Chinese and all other people who worship their ancestors are more to be commended than the people of Pennsylvania who forget the pioneers who laid the foundations of a great State. In very few counties in Pennsylvania are there to be found societies for the preservation of local history or museums for the preservation of historical relics.

We are all supposed to be patriotic, but patriotism and civic pride are not convertible terms. To love one's country and to fight for it if necessary is one thing; to be proud of its pioneers, its past history, its great men, its industrial achievements, its hospitals and other charities, its schools and churches, and the intellectual and moral progress of its people is an entirely different thing. Civic pride also implies a watchful regard for the good name of the town or city and the State in which we have our home.

New England is noted for its civic pride, and its people are deserving of the highest praise for the veneration they constantly show for the memories of their ancestors. In its periodical publications, in public addresses, and in other ways the history of the early settlement of New England, the part it has played in the development of the country, and the work of its great men and women in the learned professions and in the arts are never forgotten. New England is thus being constantly advertised to the outside world and commended to its own people for what it has done and for what it is. The literary spirit has always been cultivated in New England and it has been largely fed by the inspiration of local themes. All its great writers have found in its history and customs and traditions attractive and inspiring subjects for their fertile pens.

The civic pride which is found in the Southern States is more notable than that of New England. Without it there could not have been a four years' war for the dissolution of the Union. The great sacrifices which the people of the South made in support of the Lost Cause could not have been possible but for their pride in themselves and in their ancestors. Almost as one man they united in its support. "The first families of Virginia" was not in its day an empty phrase; the people who used it were typical of a large class. It illustrated the sentiment of intense loyalty to the South and to Southern traditions. In the old days Virginians were proud to say that their State was the mother of Presidents. And how proud they are to-day that General Robert E. Lee was a Virginian! The neighboring State of Ohio has shown far more civic pride than Pennsylvania, although, if the history of the two States be closely studied, it has not one-half as much to be proud of as Pennsylvania. But see how its people have developed a State pride that never ceases to honor the men who were born on its soil!

Abraham Lincoln's ancestors, on both his father's and his mother's side, were long residents of Pennsylvania, and the name of one of his kinsmen, also named Abraham Lincoln, is honorably associated with its history. General Grant could trace both his paternal and maternal lineage through the blood of Pennsylvanians; indeed this blood was the dominant strain in his veins, his father's mother having been Rachel Kelly, of Westmoreland county, Pennsylvania, and his own mother, Hannah Simpson, having been born in Montgomery county, Pennsylvania. And yet very few Pennsylvanians know anything of the Pennsylvania ancestry of Lincoln and Grant. Both Rachel Kelly and Hannah Simpson were of Scotch-Irish extraction. The Muhlenberg family of Pennsylvania is one of the most distinguished in our country's history, contributing as many really great men as any other family in any colony or State, but Pennsylvanians are not so familiar as they should be with the achievements of these eminent Pennsylvania Germans.

In the literary history of Pennsylvania we have had

Bayard Taylor, Thomas Buchanan Read, George H. Boker, Henry Charles Lea, the eminent historian, and other writers of prominence, but Pennsylvanians do not have that regard for the productions of these writers that the people of New England have for the creations of their own great writers. We have had our great judges—Wilson, and Tilghman, and Gibson, and others, but many Pennsylvanians do not know that such men have ever lived. If they had lived in New England the whole country would have heard of them. Bunker Hill monument has no counterpart in Pennsylvania, although great deeds were done on its soil in colonial and Revolutionary days. There is a statue of Dr. Benjamin Rush, the distinguished Philadelphian, in Washington City, but none in Philadelphia. It was only within the last few years that a creditable statue of Franklin was erected in Philadelphia, the gift of a private citizen.

Philadelphia has not erected any monument, or statue, or tablet to the memory of its great publicists whose watchful care of its manufacturing and other industrial interests has greatly contributed to its prosperity as well as to the prosperity of the whole country. Mathew and Henry C. Carey, William D. Kelley, and Samuel J. Randall are especially worthy of being gratefully remembered by a city which they so faithfully served and so highly honored. In the same class we may also place Stephen Colwell, whose great work on *The Ways and Means of Payment* and his other publications should cause Philadelphians to hold his memory in honored remembrance. But few Philadelphians know that this man ever lived. New England would have thought itself honored if all these men had lived within its borders.

There is a particularly noticeable lack of civic pride in that part of Pennsylvania which lies west of the backbone of the Allegheny mountains and is properly designated as Western Pennsylvania. This section of the State, embracing over one-third of its territorial extent, possesses a history that is rich in great achievements and in great men, although settled a full century after the eastern section. Its inhabitants, particularly the descendants of

its early settlers, have good reason to be proud of its prominent place in the industrial world, proud of its conspicuous share in opening to settlement the vast region lying west of its own boundaries, proud of its patriotic record, proud of its men of renown who have passed to the other side and of others whose work is not yet done. But these citizens of Western Pennsylvania are singularly backward in claiming for their section the honors to which it is justly entitled. Their annals are incomplete and disjointed; there is a lamentable lack of interest in historical subjects in all Western Pennsylvania—a greater lack than is noticeable in the earlier settled parts of the State. There is not published to-day within its borders a single historical magazine or other historical periodical. It has few public libraries, and those that are worthy of special mention have been established in recent years through the liberality of one man, and he is not “native here and to the manner born.” Its schools of learning and its charities have not been generously endowed by its rich men, except in one notable instance, in which the munificence of the public-spirited citizen already referred to has established and endowed a scientific school of wide scope and great usefulness.

Pittsburgh, the second city in Pennsylvania, has no monument to the great Pitt, after whom it was named, or to Washington, who visited its site in 1753, when he wrote in his journal that the point at the junction of the Allegheny and Monongahela rivers was “extremely well situated for a fort.” Washington’s early military experience was acquired in efforts to prevent the French from seizing and holding the point between these rivers where Pittsburgh now stands. There is no memorial stone or monument to mark the site of Fort Necessity, in Fayette county, which Washington surrendered to the French in 1754, or to mark the site of Braddock’s defeat in 1755, or to mark the general’s grave on the line of his retreat.

Among the few Indian relics in Pennsylvania was a large flat stone on a farm in Washington county, upon which had been carved various curious Indian hieroglyphics that had attracted wide attention from Revolutionary

times. This stone was blown up recently with dynamite by the owner of the farm to rid himself of the annoyance caused by so many visitors to the stone. With the fragments he built a smokehouse.

The trouble with Pennsylvania in all its extent, from the Delaware river to the Ohio border, is traceable to many causes. In the first place it has a population that was originally composed of elements that were not homogeneous, like that of New England and the Southern States, which were settled chiefly by people of English birth, and that were not even as homogeneous as the pioneer population of Ohio; hence a certain absence from the beginning of what may be termed local pride such as prevails among a people with a common origin. This lack of homogeneity is illustrated in the glorification of the Scotch-Irish by Pennsylvanians of Scotch-Irish ancestry and by the organization of a strong society composed exclusively of descendants of the early German settlers of Pennsylvania. Notwithstanding many intermarriages these leading strains of blood in the settlement of Pennsylvania have not yet been thoroughly mingled, nor are they likely to be. Then, too, we had the Quaker settlers of English and Welsh blood, and we have their descendants to-day, all of whom have kept themselves apart from their Scotch-Irish and German neighbors to a very large extent. Few of these, indeed, have lived in any other part of Pennsylvania than Philadelphia and the adjacent territory. In colonial days there were frequent conflicts between the dominant Quaker element and the German and Scotch-Irish settlers. They seldom agreed about anything. The large German and Irish immigration of the last sixty or seventy years has introduced other elements that have further emphasized the mixed character of the people of Pennsylvania. The German immigrants in this period have had few points of resemblance to the early German settlers, while few of the immigrants from Ireland in the same period have been Scotch-Irish. Nor should it be forgotten that in the northern and northwestern parts of the State and in Philadelphia there is a large infusion of New England blood.

In the last thirty or thirty-five years the lack of homogeneity among the people of Pennsylvania has been conspicuously and most painfully emphasized in the invasion of large sections of the State by hordes of Italians, Slavonians, and other immigrants of distinctly lower types than the original European settlers of Pennsylvania; hence less and less civic pride, for what do these people know about the past of Pennsylvania or about its present achievements? Most of them do not even speak the English language. They are not Pennsylvanians in any sense.

The negro population of Pennsylvania has largely increased since the civil war. This State has a much larger negro population than any other Northern State—156,845 in the census year 1900. Philadelphia has a larger negro population than any other Northern city and a much larger negro population than any Southern city except Washington, Baltimore, and New Orleans. This negro invasion has introduced practically a new and largely an undesirable element into the population of Pennsylvania, and it has brought its own train of evils and given the State nothing to be proud of. There are more negro voters in Pennsylvania than in any other Northern State.

If undesirable foreigners and undesirable negroes can not be restrained by law from coming into Pennsylvania an enlightened public sentiment, which is of the essence of civic pride, should be aroused to the necessity of securing by some means all possible protection against one of the greatest evils that now menace the good name and the material and moral well-being of the Commonwealth—the debasement of our population. Western Pennsylvania suffers far more from the influx of undesirable immigrants and undesirable negroes than Central or Eastern Pennsylvania. A recent writer points out in the following sentences a serious defect in the character of one class of present-day immigrants which has thousands of representatives in Pennsylvania. "The weak point in the Italian temperament is easily found. It is the hot temper and the thirst for revenge that go with their passionate natures. That this is a real handicap no one will deny." The foreign element and the negro element referred to

afford a wide field for missionary work by the churches which has heretofore been greatly neglected. The present situation is simply deplorable. Worthy negroes and worthy foreigners are, of course, always welcome.

Another cause of the trouble with Pennsylvania is found in the arduous pursuits of many of its people, who are now and long have been so largely occupied in such exhausting employments as the mining of coal, the making of coke, the manufacture of iron and steel and glass, the pumping of oil, the building and operating of canals and railroads, and the cutting down of forests that they have not, as a rule, felt the impulse to consult the few authorities which tell of the past and present achievements of Pennsylvania, even its industrial achievements, a knowledge of all of which is surely essential to the development of civic pride such as Paul felt when he boasted that he was "a citizen of no mean city."

It may be frankly admitted that the pursuits of a people have much to do with their mental development, their tastes, and their ambition. The people of Western Pennsylvania especially have been so absorbingly devoted to the development of its natural resources and so keen to embrace its exceptionally favorable business opportunities that the less strenuous and more intellectual side of life, which appeals to the imagination, to the love of art and music and elevating literature, and which places a liberal education above mere money-making, has been in large part neglected. Its people have even neglected to adequately record the industrial achievements to the accomplishment of which they have been so devoted. Western Pennsylvania has little literature that tells the world what its whole people have done in leading departments of human effort.

Lastly, the physical conformation of Pennsylvania has had very much to do with the lack of civic pride among its people. The Allegheny mountains form a great natural barrier between the eastern and the western parts of the State. Over a century elapsed after the first white settlements were made on the Delaware before there were any white settlements whatever in the Allegheny and

Monongahela valleys west of the mountains. Social and business intercourse between these sections before the days of railroads was infrequent, and nearly all intercourse between them to-day is a matter of either business or politics. There is more business and social intercourse between Philadelphia and New York than between Philadelphia and Pittsburgh. When a rich man in Pittsburgh decides to change his residence to another city he moves to New York and not to Philadelphia. The interests of the two sections are not antagonistic but they are not notably identical. Speaking generally they were not settled by the same races. There are comparatively few Pennsylvania Germans in Western Pennsylvania, and in the counties along the Delaware and the Schuylkill there are few descendants of Scotch-Irish. A common pride in the great names or the great achievements of either section has certainly not been promoted by the barrier that has been mentioned. It has been said that "lands intersected by a narrow frith abhor each other," and mountain barriers, even when scaled by railroads, undoubtedly exercise an unneighborly if not an unfriendly influence. Incidentally it may be mentioned that Pennsylvania is a State of very great territorial extent. Very few of its citizens have ever visited all of its sixty-seven counties, or even the half of them.

The people who settled Eastern Pennsylvania, even the proprietaries who succeeded Penn, did not concern themselves very much about the western part of the State. A Dutch writer, of Amsterdam, once innocently gave expression to the popular conception of the extent of Pennsylvania which prevailed for many years after its settlement. He said that Pennsylvania embraces "an extensive tract of land, bounded on the east by the Delaware, on the north by the present New York, on the west by the *Allegheny mountains*, and on the south by Maryland."

The lack of civic pride in Pennsylvanians is thus seen to be due to several influences, each important and all contributing to a condition which every loyal Pennsylvanian must deplore. The time will doubtless come, although it may be long delayed, when the citizens of

this great Commonwealth, although justified in boasting that they are descended from Scotch-Irish, German, Dutch, Huguenot, English, Welsh, or other ancestry, will also be proud to say that they are Pennsylvanians and the descendants of Pennsylvanians, and will point to the monuments that have been erected and to other evidences that they and their fathers have remembered the days of old. In the meantime, if there are political or other wrongs to be righted in Pennsylvania and they are permitted to continue—if our laws for the regulation of the liquor traffic and the sweatshops and the employment of children in factories and in and about coal mines are not made more stringent and more restrictive than they are—the fault will lie with those who, whatever their boasting, still lack the true civic pride that maketh a great people and, next to righteousness, exalteth a nation.

In the following chapters an attempt will be made to show that Pennsylvania is entitled to greater honor than she has yet received from her own citizens, and in the facts that we shall present particular attention will be paid to Western Pennsylvania, whose history has heretofore been greatly neglected, especially its industrial history. First, however, the leading facts which relate to the early settlement of the province will be presented.



CHAPTER II.

THE FOUNDING OF PENNSYLVANIA.

THE charter of the province of Pennsylvania was granted to William Penn in March, 1681, in consideration of a debt of £16,000 due by the king, Charles the Second, to his father at the time of the latter's death in 1670. Sir William Penn, the father, had been an admiral of distinction in the British navy and was a warm personal friend of the king. The son, therefore, in reality paid nothing for his province except the payments he made to the Indians.

When Penn received his charter from Charles the Second, and in October of the following year sailed up the Delaware in the good ship *Welcome*, he was not the first person to attempt the establishment of a colony of Europeans within the limits of the present Commonwealth of Pennsylvania. "Brave men were living before Agamemnon." The way had been prepared for Penn's "holy experiment" by the Swedish and Dutch settlers on both the east and the west banks of the Delaware, and even by other Englishmen, the Swedes preceding Penn with actual settlements by about forty-three years, (1638,) the Dutch, after their victory over the Swedes, by about twenty-six years, (1655,) and the Duke of York's settlers at Upland and elsewhere by about seventeen years, (1664). The Dutch were the first Europeans to explore the Delaware, but they made no permanent settlements on its west bank until after the coming of the Swedes. A few Finns came with the Swedes. When Penn came there were Swedish settlements on the Delaware above and below the mouth of the Schuylkill and on the Schuylkill itself, and up the Schuylkill and lower down the Delaware there were a few Dutch settlements, while across the Delaware in West Jersey and on the west side of the river above and below the site of the future Philadelphia there were a few English settlements. All these predecessors of Penn established and with few exceptions maintained friendly rela-

tions with the Indians on both banks of the Delaware, so that, when Penn came with his colonists and his peaceful intentions, it was easy for him to secure the good will of these primitive people. Penn was, therefore, in no sense a pioneer in the settlement of his province, nor did he have to contend with hostile Indians, as many of the pioneers in other colonies, and also the early settlers in the interior of Pennsylvania in after years, had to do. He is entitled to unending praise for the great and wise work that he did in founding an empire on the principles of civil and religious liberty, which were not so generally recognized in that day as they are now, but the Swedes, the Finns, the Dutch, and the Duke of York's settlers were here long before the granting of the famous charter.

Delaware bay was visited by Henry Hudson, then in the service of the Dutch East India Company, in 1609, and in 1610 it was visited by Captain Samuel Argall, commanding an English vessel, who gave it and the river the name of Delaware in honor of Lord de la Warr, the governor and captain-general of Virginia. The Indians had various names for the Delaware river. The Schuylkill river is supposed to have been discovered in 1616 by Captain Cornelius Hendricksen, in command of a Dutch vessel, the *Onrust*. Hendricksen is said to have named the river Schuylkill, which means hidden stream, the story being that, in sailing up the Delaware, he did not notice the mouth of the Schuylkill, as it was hidden by the overhanging foliage, but he observed it on his return. The Delaware Indians called it *Ganshowehanne*, meaning waving stream.

In 1623 or 1624 Captain Cornelius Jacobson Mey, commanding a vessel owned by Amsterdam merchants, and who had previously visited Delaware bay, sailed up the Delaware and founded Fort Nassau in New Jersey, nearly opposite Philadelphia, as a trading post with the Indians. The fort stood for nearly thirty years, when it was abandoned. This was the first settlement of white persons on the Delaware of which there is authentic information, but it was not in Pennsylvania or in the territory now embraced in the State of Delaware. In 1643 the Swedes

built Fort Elfsborg, in West Jersey, near the site of the present town of Salem, but the fort was abandoned about two years after it was built, the Dutch resenting the presence of the Swedes in New Jersey.

In 1631 the Dutch, under David Pietersen DeVries, founded a settlement which they called Swanandael, on the west side of Delaware bay, at a point near where the town of Lewes, in Sussex county, Delaware, is now located. This settlement lasted for about one year, when all the inhabitants, about thirty in number, were massacred by the Indians. Trading by the Dutch with the Indians on the Delaware continued, however, without serious disturbance or interruption until 1638, in which year a small colony, under the auspices of Queen Christina, of Sweden, sailed up the Delaware in two ships, commanded by Peter Minuet, with the express purpose of founding a permanent settlement on the west side of the river. This settlement was successfully established at Fort Christina, now Wilmington. Quarrels more or less serious between the Dutch and the Swedes for the control of the trade of the Delaware and the territory on both sides of the river followed this settlement. In the meantime many Swedes and Finns re-enforced the parent Swedish colony and established other settlements, the principal new settlement being at Tinicum, below the present Philadelphia. This was the first settlement of Europeans within the limits of Pennsylvania. It was founded in 1643. The Swedes, who called their new country New Sweden, had no serious quarrels with the Indians, nor had the Dutch on the Delaware after the massacre at Swanandael, although the Swedish policy in dealing with the Indians was always more distinctly peaceable than that of the Dutch. The Swedes were mostly farmers and they invariably bought their lands from the Indians. The Dutch on the Delaware were chiefly traders in beaver skins and other furs and were never so numerous as the Swedes. As traders they did not hesitate to pay the Indians for their furs with brandy and other liquors, which caused most of the troubles that the settlers experienced in dealing with them. The Delaware Indians, otherwise known as the Lenni Lenape, occupied the land on both

sides of the Delaware and were known as River Indians, but west of them, on the headwaters of Chesapeake bay, were the warlike Susquehannocks, or Minquas, who did not live on terms of amity with the Delawares. All the domestic animals, the cereals, and garden vegetables were brought by the Swedes and Dutch to the Delaware.

In 1655 the Dutch were successful in establishing their supremacy over the Swedes, but they permitted the Swedes to remain. Nine years later the whole Delaware country, following the surrender of New York by the Dutch to the English, passed under the control of the Duke of York, who maintained his rule over the territory west of the Delaware, with the exception of about one year, until the coming of Penn. When Penn came in 1682 he first landed at New Castle and a day or two after at Upland, now Chester, the former being the capital of the Duke of York's possessions on the Delaware. Upland was the Swedish capital. The Dutch capital was at Fort Amstel, now Newcastle.

The number of settlers on the west side of the Delaware at the time of Penn's acquisition of his province can only be conjectured. It has been estimated that the total number of settlers of all nationalities on the west side in 1664, when the Duke of York's rule on the Delaware succeeded that of the Dutch, may have amounted to two thousand men, women, and children, most of whom were Swedes. This was seventeen years before the granting of Penn's charter, so that, as both Swedes and English continued to increase in numbers, it is a fair presumption that the population in 1681 may have amounted to three thousand, although Janney thinks that the population in this year on the west side of the Delaware was "about two thousand souls, consisting mostly of Swedes and English." Most of these settlers were good people and in every way worthy material with which to lay the foundations of a great commonwealth. Swedish names are to be found to-day among the leading families of Eastern Pennsylvania, and some Pennsylvania families of English origin boast of their descent from ancestors who settled on the Delaware before Penn received his charter. One of the signers

of the Declaration of Independence, John Morton, was descended from a Swedish settler on the Delaware. Colonel Robert Anderson, who was in command of Fort Sumter at the outbreak of our civil war, was the descendant of another Swedish settler. There are many streets in Philadelphia which bear Swedish names.

We now come to the grant of the province of Pennsylvania to William Penn by Charles the Second and will quote literally from that document, which is dated March 4, 1681. The preamble reads as follows: "Charles the Second, by the Grace of God King of England, Scotland, France, and Ireland, defender of the faith, &c. To all to whome these presents shall come Greeting. Whereas our Trustie and well beloved Subject, William Penn, Esquire, sonn and heire of Sir William Penn, deceased, out of a commendable desire to enlarge our English Empire and promote such usefull comodities as may bee of benefit to us and our Dominions, as alsoe to reduce the Savage Natives by gentle and just manners to the love of civill Societie and Christian Religion, hath humbley besought leave of us to transport an ample colonie unto a certaine Countrey hereinafter described in the parts of America not yet cultivated and planted. And hath likewise humbley besought our Royall majestie to give, grant, and confirme all the said countrey with certaine privileges and Jurisdiccions requisite for the good Government and safetie of the said Countrey and Colonie to him and his heirs forever."

Then follows the grant in great detail, the material parts of which we copy in this paragraph. The territory conveyed to Penn by the king embraced, in the exact words of the charter, "all that tract or parte of land in America, with all the Islands therein conteyned, as the same is bounded on the East by Delaware River from twelve miles distance Northwarde of New Castle Towne unto the three and fortieth degree of Northern latitude if the said River doth extend soe farre Northwards; but if the said River shall not extend soe farre Northwarde then by the said River soe farr as it doth extend, and from the head of the said River the Easterne bounds are to bee de-

terminated by a meridian line to be drawn from the head of the said River unto the said three and fortieth degree, the said lands to extend Westwards five degrees in longitude, to bee computed from the said Eastern Bounds, and the said lands to bee bounded on the North by the beginning of the three and fortieth degree of Northern latitude, and on the south by a circle drawn at twelve miles distance from New Castle Northwards, and Westwards unto the beginning of the fortieth degree of Northern latitude ; and then by a straight line Westwards to the limitt of Longitude above mentioned, . . . And him the said William Penn, his heirs and assignes, Wee Doe, by this our Royall Charter, for us, our heirs and successors, make, create and constitute the true and absolute proprietaries of the Countrey aforesaid, and of all other the premises, saving always to us, our heirs and successors, the faith and allegiance of the said William Penn, his heirs and assignes, and of all other, the proprietaries, tenants and Inhabitants that are or shall be within the Territories and precincts aforesaid ; and saving alsoe unto us, our heirs and Successors, the Sovereignty of the aforesaid Countrey, To Have, hold, possesse and enjoy the said tract of Land, Countrey, Isles, Inletts and other the premises, unto the said William Penn, his heirs and assignes, to the only proper use and behoofe of the said William Penn, his heires and assignes forever. . . . And of our further grace certaine knowledge and meere mocon, wee have thought fitt to Erect, and wee doe hereby Erect the aforesaid Countrey and Islands into a province and Seigniorie, and doe call itt Pensilvania, and soe from henceforth wee will have itt called."

It is a somewhat remarkable fact that the boundaries of the province of Pennsylvania as above defined, notwithstanding many territorial controversies with other colonies, correspond almost exactly with the present boundaries of Pennsylvania, the Erie triangle constituting almost the only variation, and this bit of territory was acquired after the close of the Revolution.

The following provision of the charter, appointing William Penn the commanding general of any army to be

raised and employed in his province, and authorizing him to "make war as well by sea as by land," is of special interest when Penn's peaceable and nonresistant convictions are considered: "And because in soe remote a Countrey, and scituate neare many Barbarous Nations, the incursions as well of the savages themselves, as of other enemies, pirates and Robbers, may pbably be feared. Therefore, Wee have given and for us, our heires and successors, Doe give power by these presents unto the said William Penn, his heires and assignes, by themselves or their Captaines or other their officers to levy, muster, and traine all sorts of men, of what condicon, or whatsoever borne, in said pvince of Pensylvania, for the time being, and to make warr and pursue the enemies and Robbers aforesaid, as well by Sea as by Land, yea, even without the Limits of the said pvince, and by God's assistance to vanquish and take them, and being taken to put them to death by law of Warr, or to save them att their pleasure, and to doe all and every other act and thing which to the charge and office of a Captaine generall of an Army belongeth, or hath accustomed to belong, as fully and ffreely as any Captaine Generall of an Army hath ever had the same."

The charter having been granted Penn made immediate preparations to secure settlers for his province and to develop its resources. The Free Society of Traders was organized to promote both these objects; pamphlets were prepared by his own hand and widely circulated either as a whole or in part in Holland, Germany, and France, as well as in England and Wales, presenting the advantages of his province as a home for all who were dissatisfied with their surroundings; an elaborate "frame of government" for the province was also prepared by his own hand; and in a general way his time was busily occupied for a year and a half in the work of perfecting all the details that were necessary to insure to his "holy experiment" a good start and ultimate prosperity. In June, 1681, Penn's cousin, William Markham, reached New York on his way to Pennsylvania as Penn's commissioner to establish his authority in the province, which was done at

Upland on August 3 of that year, Upland remaining the capital of the province until it was superseded the next year by Philadelphia. Other commissioners soon followed Markham. In the same year several vessels left England for Pennsylvania, bringing many settlers. The additional commissioners were surveyors.

In the spring of 1682 Markham and the other commissioners selected the territory now embraced in the central part of Philadelphia as the site of the future capital and commercial city, and during the spring and summer Markham obtained titles from the Indians to large tracts of territory both within and outside the limits of Philadelphia, extending into the present counties of Bucks, Chester, and Montgomery. A survey of the city into streets, alleys, lots, and reservations from the Delaware to the Schuylkill and from Vine street to South street was undertaken, but this survey was not completed until 1683. In the meantime Penn arrived in the province in October, 1682, as has been stated, his ship, the *Welcome*, bringing about seventy colonists. Other ships came in the same year, both before and after Penn's arrival, bringing hundreds of English and Welsh settlers. In all twenty-three vessels arrived in the province in 1681 and 1682. Many other vessels followed in 1683, adding largely to the population of the province. Nearly all the immigrants in the first three years were English and Welsh, and the most of them were Friends, or Quakers. A large majority were English. In August, 1683, Penn wrote a letter to the Free Society of Traders in which he said: "The planted part of the province is cast into six counties, Philadelphia, Buckingham, Chester, Newcastle, Kent, and Sussex, containing about four thousand souls. . . . Two General Assemblies have been held." In the same letter he said that Philadelphia then contained "about fourscore houses and cottages." In a letter written in the same year to the Duke of Ormonde, probably late in the year, Penn said: "Our town of Philadelphia is situated between two navigable rivers, having from 4 to 10 fathoms of water, about 150 houses up in one year, and 400 country settlements." In 1684 the population of the province is estimated to

have amounted to seven thousand men, women, and children, one-third of whom lived in Philadelphia.

On December 4, 1682, the first General Assembly for the province convened at Upland, in accordance with Penn's "frame of government." Penn himself was present. He had previously changed the name of Upland to Chester, so naming it after Chester in England. The Assembly passed an act uniting with Pennsylvania the three counties afterwards embraced in the State of Delaware. The three Pennsylvania counties and the three Delaware counties were organized and their boundaries determined at the same session of the Assembly. In March, 1683, the Assembly first met in Philadelphia, which thereafter remained the capital of the province. It is interesting to note that the term General Assembly, which is the present name of the legislative branch of the government of Pennsylvania, appears in Penn's "frame of government" and probably originated with him.

Philadelphia received its name from Penn, who selected it before he left England and even before its exact location was determined. In a letter written by him in 1684 he apostrophizes the new city as follows: "And thou, Philadelphia, the virgin settlement of this province, named before thou wast born." Its meaning, brotherly love, was particularly appropriate in view of Penn's religious views. Philadelphia is the name of a city in Asia Minor and is mentioned in the third chapter of the Revelation of St. John the Divine. It may be that Penn, in choosing the name Philadelphia, had also in mind the sentiment expressed in the eighth verse of the chapter referred to: "Behold, I have set before thee *an open door*." After Penn's arrival he purchased from three Swedish brothers, named Swenson, several hundred acres of land at the junction of the Delaware and Schuylkill rivers, embracing the settlement known as Wicaco, and he made other purchases of land both from the Swedes and the Indians.

In August, 1684, Penn returned to England. He had resided in Pennsylvania for nearly two years. He did not revisit his province until December, 1699, again remaining almost two years, until October, 1701, when he returned

to England, never again to see the shores of the Delaware. After the latter year the immigration of English and Welsh Friends virtually ceased.

Penn obtained his title to the territory now comprising the State of Delaware from the Duke of York in 1682 and not from his charter. The consideration which Penn agreed to pay to the Duke of York, afterwards James the Second, was only nominal. The three counties into which this territory was divided were granted a separate legislature by Penn in 1703, but they were otherwise subject to the control of the authorities of Pennsylvania until 1776, when they were organized into an independent State. William Penn and the Duke of York were warm friends.

Philadelphia and the surrounding country grew rapidly after Penn had come into personal touch with his province and in the years immediately following his first visit. Law and order were at once established through the "frame of government" which he had prepared. Hundreds of houses were built and hundreds of farms were opened. Roads in the neighborhood of Philadelphia took the place of bridle paths. Wagonmakers, plowmakers, blacksmiths, carpenters, and other mechanics were kept busy from year to year. Mills for grinding grain and sawing lumber were built. Other industries followed the primitive industries that the Swedes and other early settlers had established. Ships were built and trade with the mother country and with other colonies and the West Indies was soon in active operation. Many of the early Philadelphians were experienced merchants. Peace with the Indians was maintained because Penn always insisted that they be fairly treated and that their lands be paid for. There was a continuous stream of immigration, English and Welsh Friends, or Quakers, largely predominating in the early years, as has been stated, but Episcopalians from England soon came in large numbers, as well as representatives of other sects and nationalities to be mentioned hereafter.

The Swedes continued to form an important element in the population of the colony. In 1700 the Swedish Lutherans built the celebrated "Old Swedes" church at Wicaco, in the southern part of Philadelphia, which is still

standing in good repair and in use. Before the coming of Penn many Swedes had settled in the present Montgomery county. In 1701 a colony of Swedes from the Delaware settled in Berks county and before 1720 they built a church at Douglassville. There is to-day an "Old Swedes" church at Norristown and there are other "Old Swedes" churches still standing in Delaware.

Referring again to the building of ships in Pennsylvania the following extract from Colonel Buell's biography of William Penn claims for him a new honor: "More than a hundred houses were built in Philadelphia during the summer of 1683 and Penn had a small ship built for the account of the Free Society of Traders. She was called the *Amity*. This was the beginning of shipbuilding in Philadelphia, an art in which the city has excelled from that day to this. It is interesting to note that, though the *Amity's* hull and spars were new and built of American timber, her ironwork, standing rigging, and much of the running rigging were taken from an old brig of the same name which had brought over a load of emigrants the previous fall and was then condemned and broken up at Chester, having nearly foundered on the voyage. No sea-going vessel was built in Massachusetts until fourteen years after the landing of the Pilgrims. But Penn built a ship in Philadelphia within three years from the signing of his charter."

When Penn returned to his province in 1699, after an absence of fifteen years, during which period he passed through many tribulations on its account, he found it in a prosperous condition from almost every point of view. Its population at this time numbered about twenty thousand. The "holy experiment," although it was destined to give its author still further trouble of a serious nature which need not be dwelt upon, was now an assured success. The population of Pennsylvania at the time of William Penn's death in 1718 is estimated to have amounted to forty thousand, of whom one-half were Quakers and one-fourth of the whole number lived in Philadelphia.

William Penn was born in London on October 14, 1644, and died at Ruscombe on July 30, 1718, aged almost

74 years. For many years before his death he was greatly distressed in mind and body. We need not devote further space to the connection of this great man with the up-building of a great commonwealth. No people ever had a wiser leader or one whose influence for good has been more widely diffused or more generally recognized.

We presume that there are but few persons who do not believe that Pennsylvania was so named by William Penn, and named, too, after himself. Not only are both of these suppositions incorrect but the origin of the name is involved in some obscurity. Day says: "By the king's order, much against Penn's inclination, the new province was to be called Pennsylvania, in honor of the services of his illustrious father." Hazard quotes from official records to show that, when the privy council of Charles the Second submitted to him the draft of the charter of the province, "there being a blank left for the name their lordships agree to leave the nomination of it to the king." Janney gives the full title of the privy council as the "Committee of the Privy Council for the Affairs of Trade and Plantations." The day after the charter was granted to Penn he wrote a letter to his friend, Robert Turner, in which he gave the particulars of the naming of his province. The essential parts of that letter we quote *verbatim* as follows:

"Thine I have and for my business here know that, after many waitings, watchings, solicitings, and disputes in council, this day my country was confirmed to me under the great seal of England, with large powers and privileges, by the name of Pennsylvania, a name the king would give it in honour of my father. I chose New Wales, being as this, a pretty hilly country; but Penn being Welsh for a head, as Penmanmoire, in Wales, and Penrith, in Cumberland, and Penn, in Buckinghamshire, the highest land in England, called this Pennsylvania, which is the *high* or *head woodlands*; for I proposed, when the secretary, a Welshman, refused to have it called New Wales, *Sylvania*, and they added *Penn* to it; and though I much opposed it, and went to the king to have it struck out and altered, he said it was past, and would take it upon him; nor could twenty guineas move the under-secretary to vary the

name; for I feared lest it should be looked on as vanity in me, and not as a respect in the king, as it truly was, to my father, whom he often mentions with praise."

At first sight the reader will probably conclude that to the king do we owe the *whole* of the name of Pennsylvania, but a second look will convince him that we are indebted to Penn for the Sylvania portion of it. So much seems to be clear and unquestionable. But it is not so clear from whom came the prefix Penn. Penn, having at first stated with much positiveness that "the king would give" to the province "the name of Pennsylvania," and having subsequently stated that *he* proposed Sylvania, we naturally hesitate to receive the remainder of his statement without a careful analysis of its meaning. Failing to obtain the adoption of the name New Wales, Penn, as we have seen, proposed Sylvania, and immediately afterwards remarks that "*they* added Penn to it." To whom does the term "*they*" refer? There are three considerations which point to the secretary and his assistants as the persons meant. First, if Penn had meant the king it is to be presumed that he would have said so; second, the term is plural, not singular; third, Penn offered to pay the under-secretary to omit the prefix, which Penn would hardly have done if the king had ordered it to be inserted. So far the evidence points *from* the king. But Penn straightway proceeds to give evidence on the other side as follows: "for I feared lest it should be looked on as a vanity in me, and not as a respect in the *king*, as it truly was, to my father."

And this is the history of the naming of Pennsylvania. That the king's privy council, in submitting to His Majesty the draft of the charter of the province, left to him the selection of a name therefor Hazard expressly states and proves before giving the Turner letter, but that the king exercised the privilege is not proved from that letter or from anything else that has been written. And yet, that the king was determined that the name of the province should be Pennsylvania is shown conclusively by the exact words of the charter, in which the king says that "wee doe hereby . . . call itt Pensilvania, and soe from

henceforth wee will have itt called." Penn's fear that the name of Pennsylvania would be attributed to a desire on his part to perpetuate his own name in that of his province has been realized in the popular opinion of the day.

There was ample precedent for the use by Penn of the name New Wales. The impulse to prefix the word "new" to the names of provinces and towns was a strong one with the founders of empire on this continent. There were New France, New England, New Netherlands, New Amsterdam, New York, New Jersey, and New Sweden. Why not New Wales!

In the early days of its history Pennsylvania was frequently referred to in written and printed documents as Pennsylvania, Pennsilvania, and Pensilvania, even the charter to Penn spelling the name in different ways. In 1698 Gabriel Thomas printed in London *An Historical and Geographical Account of the Province and Country of Pensilvania and of West Jersey in America*. This spelling is found in Reynier Jansen's *Abstract or Abridgment of the Laws*, etc., printed in Philadelphia in 1701. As late as 1714 the title page of the laws of Pennsylvania, printed by Andrew Bradford in Philadelphia in that year, reads as follows: *The Laws of the Province of Pennsilvania, collected into One Volumn, by Order of the Governor*, etc.

A few years after he had founded Philadelphia Penn proposed to make "a second settlement" in his province upon a scale somewhat similar to the plan of Philadelphia itself. This scheme Penn made public in England in 1690 in a formal prospectus, a *fac simile* of which has been published by the Historical Society of Pennsylvania, entitled "Some Proposals for a Second Settlement in the Province of Pennsylvania," from which we quote as follows:

"It is now my purpose to make another settlement, upon the river of Susquehannagh, that runs into the Bay of Chesapeake, and bears about fifty miles west from the River Delaware, as appears by the common maps of the English Dominion in America. There I design to lay out a plat for the building of another city, in the most convenient place for the communication with the former plantations on the East; which by land is as good as done

already, a way being laid out between the two rivers very exactly and conveniently at least three years ago; and which will not be hard to do by water, by the benefit of the River Scoalkill; for a branch of that river lies near a branch that runs into Susquehannagh river, and is the common course of the Indians with their skins and furs into our parts, and to the Provinces of East and West Jersey and New York, from the west and northwest parts of the continent from whence they bring them. . . .

“To conclude, that which particularly recommends this settlement is the known goodness of the soyle, and scituation of the land, which is high and not mountainous; also the pleasantness and largeness of the river, being clear and not rapid and broader than the Thames at London-bridge, many miles above the place designed for this settlement; and runs (as we are told by the Indians) quite through the Province, into which many fair rivers empty themselves. The sorts of timber that grow there are chiefly oake, ash, chesnut, walnut, cedar, and poplar. The native fruits are pawpaws, grapes, mulberys, chesnuts, and several sorts of walnuts. There are likewise great quantities of deer, and especially elks, which are much bigger than our red deer, and use that river in herds. And fish there is of divers sorts and very large and good and in great plenty.”

The scheme of founding a second Philadelphia on the Susquehanna appears to have never taken shape. But Penn's prospectus shows that as early as 1690 all fear of trouble with the Indians between the Delaware and the Susquehanna had been dispelled, if it had ever seriously existed, and that some progress had been made at that time toward the extension of white settlements to the Susquehanna. His description of the Susquehanna region, its trees, animals, etc., is also valuable. It is also an interesting fact that three years before the prospectus was issued, as early as 1687, a “way” had been “laid out” between the Delaware and the Susquehanna rivers. This “way” was undoubtedly the road up the west bank of the Schuylkill to the mouth of French creek and thence to the Susquehanna at or near the mouth of Conestoga creek.

CHAPTER III.

THE PEOPLE WHO SETTLED PENNSYLVANIA.

THE settlement of Pennsylvania under Penn's charter could not be confined to emigrants from England and Wales, nor did Penn wish that it should be so confined, or that it should be limited to people of his own faith. On the contrary he encouraged all the discontented of Great Britain and of Continental countries to help him to settle his province: all were welcome. Next to his own countrymen and to members of the Society of Friends especially he caused the attractions which Pennsylvania presented to be widely known in the Rhine countries, where civil and religious persecution was active, cruel, and relentless, and where poverty was most pinching and oppressive. His name and his liberal views upon all questions of religion and of civil government were well known in these countries before he received his charter. His mother was Margaret Jasper, a native of Holland, the daughter of John Jasper, an English merchant living in Rotterdam. In 1671 and again in 1677 Penn had visited Holland and Germany to preach the Friends' doctrines, which in some respects did not differ widely from the religious views of the Mennonites in those countries and in Switzerland and in other respects fully agreed with them, so much so that the Mennonites after their removal to Pennsylvania were very often called German Quakers. Before either of Penn's visits, however, there were in both Holland and Germany a few adherents of the Friends' doctrines as they were taught by George Fox and others. After the charter for Pennsylvania had been granted it was therefore only natural that many of the impoverished and oppressed people of the Rhine countries, Holland, Germany, France, and Switzerland, should turn their thoughts to this province as a refuge from all their troubles. Many of these came in the early years after Penn had received his charter and many thousands came afterwards.

The first emigrants from the Continent who accepted Penn's invitation were led by Francis Daniel Pastorius, a well born and highly educated native of Sommerhausen, Germany, who was born in 1651 and became a lawyer of distinction and an enthusiast in promoting the welfare of his countrymen whose religious views he shared. In a general sense he was a Pietist, a term which, broadly interpreted, designated all those German Protestants who did not believe in dogmas or formal modes of worship. His parents were Lutherans. As a Pietist he fraternized with the Mennonites. After coming to Pennsylvania he affiliated with the Friends, as did also many Mennonites. The Mennonites were a numerous sect, found in Holland, the Rhine provinces of Germany, and Switzerland, their name being derived from Menno Simons, a Catholic priest, a native of Holland, who had abandoned his church and had become the leader of the reformed Anabaptists. He was born in Friesland, Holland, in 1505 and died in 1561. Pastorius, anxious to emigrate to a land where civil and religious liberty prevailed, was easily induced to become the agent of some enterprising Germans who had purchased from William Penn many thousand acres of land in the vicinity of Philadelphia. He arrived in Philadelphia in August, 1683, while Penn was still here and personally directing the affairs of his province, and was a few weeks afterwards followed by thirteen Mennonite families, embracing thirty-three persons, from Crefeld, a German town on the border of Holland, some of whom were Germans while others were Hollanders. On the land acquired from Penn by these Crefelders and others Pastorius founded Germantown on October 24, 1683, and he gave it its name. The original settlers were soon followed by other Mennonites, mostly farmers, some of whom were Germans, others Hollanders, and others Swiss. In 1702 a settlement of Mennonites was made on Skippack creek, in what is now Montgomery county, but in the meantime many Mennonites and others had opened farms nearer to Germantown.

The first settlers of Germantown, including the Crefelders, were mostly weavers, and they at once began the manufacture of woolen and linen fabrics. Gabriel Thomas

says that Germantown linen was "such as no person of quality need be ashamed to wear." Other mechanical industries were added as the immigrant population increased. Germantown soon became known as a manufacturing town. It was the first distinctively manufacturing town in Pennsylvania. One of its early industries was the knitting of hosiery, an industry which survives to-day.

On March 7, 1684, Pastorius wrote from Philadelphia as follows: "Here and there towns are being built. Beside our own one by name Franckfurt, about half an hour from here, is beginning to be started, where also a mill and glass factory are built. Not far from there, namely, two hours from here, lies our Germantown, where already forty-two people live in twelve homes, who are for the most part linen weavers and not much given to agriculture."

Among the early industries established at Germantown or in its immediate vicinity was the manufacture of paper. Some time before 1690 Willem Rittinghuysen, a Mennonite minister, built a paper mill on a small tributary of the Wissahickon, which Bishop says was the first paper mill in the colonies. Rittinghuysen was a native of Guelderland, a province of Holland. About 1688 he emigrated to Germantown from Arnheim on the Rhine, the capital of Guelderland. For generations the family had been engaged in the manufacture of paper. After the industry on the Wissahickon had been established by Willem Rittinghuysen it continued to be carried on in the same locality by his descendants for many generations. His great-grandson, David Rittenhouse, the astronomer, and the leading American scientist in the colonial and Revolutionary periods, eminent also for his services to the cause of the colonists during the Revolution, was born at Germantown on April 8, 1732, and died in Philadelphia on June 26, 1796. On April 14, 1792, Rittenhouse was appointed by President Washington the first director of the United States Mint. There is a street in Germantown called Rittenhouse street, and one of the aristocratic sections of Philadelphia is called Rittenhouse square.

Pastorius became the schoolmaster, lawyer, and general adviser of the Germantown settlers, and until his death,

which occurred in 1719, he exerted great influence among them and among other Pennsylvania pioneers long after Germantown had become the centre of a large immigration of Germans and others. He was a justice of the peace and a member of the General Assembly. He is worthy of remembrance as the leader among the German settlers of Penn's province, and also because of the nobility of his character and his many scholarly and other accomplishments. He was master of several languages and wrote much on various subjects. His pen was freely used in commending Pennsylvania to his countrymen and to others in the Rhine provinces, and many of these, especially Mennonites, came to Pennsylvania through his representations. In the early history of Pennsylvania Pastorius was undoubtedly, next to William Penn, the most influential and the most accomplished of all the emigrants who came from any country. His name is eminently worthy of being associated by all Pennsylvanians with that of William Penn himself. Penn said of him that he was "sober, upright, wise, and pious—a man everywhere esteemed and of unspotted name." That the two men were close friends is made plain in the following extract from a letter written by Pastorius in March, 1684, in which he gives us a beautiful picture of the great Quaker. He says: "My pen (although it is from an eagle, which a so-called savage recently brought into my house,) is much too weak to express the lofty merits of this Christian, for such he is indeed. He invited me very often to his table, also to walk and ride in his always elevating society; and when I was last away from here for eight days, to bring victuals from New Castle, and he had not seen me for that length of time, he came himself to my little house and requested that I should still come two or three times to his home as his guest. He was very fond of the Germans and once said openly in my presence to his councillors and attendants: 'The Germans I am very fond of and wish that you should love them also,' although I never at any other time heard a similar command from him; but these pleased me the more because they entirely conform to the command of God (vid. 1 John 3: 23). I can now say no more than that Will.

Penn is a man who honors God, and is by Him honored in return, who loves good, and is by all good men rightly loved, etc. I do not doubt that others will yet come here and learn by experience that my pen has not written enough in this direction."

The Mennonites who settled Germantown were not the first of their faith who came to the Delaware. Historians tell us that about 1662 twenty-five Mennonites from Holland, under the leadership of Peter Cornelius Plockhoy, established a small colony on the west side of the Delaware, at a place called Hoornkill, on or near the site of the unfortunate Swanandael, and that in 1664 these "defenseless Christians" were dispersed by the Duke of York's soldiers, their subsequent fate, except that of their leader, being unknown. Plockhoy and his wife, long years afterwards, found their way in their old age to Germantown, where they were tenderly cared for until they died.

Nor were the Crefelders who founded Germantown the first Germans to settle on the Delaware. In the same letter from which we have already quoted Pastorius says: "In regard to the inhabitants I can do no better than divide them into the *natural* and the cultivated. . . . Concerning these first cultivated foreigners I will say no more now than that among them are found some Germans who have already been in this country twenty years, and so have become, as it were, naturalized, namely, people from Schleswig, Brandenburg, Holstein, Switzerland, etc."

Following the Mennonite settlement of Germantown in 1683 came members of the long established German Reformed and Lutheran denominations, who were chiefly Germans from the Palatinate, where religious persecution and the horrors of devastating war had long prevailed. At first only a few of each denomination came, some of whom settled in Germantown but the most of whom settled in the Schuylkill valley and in the Delaware valley above Philadelphia, but their numbers steadily increased, and soon after 1700 many thousands of each sect and of Mennonites had settled in Bucks, Montgomery, Lehigh, Northampton, and Berks counties. The Mennonites entered the Conestoga valley in Lancaster county in 1709. It has been esti-

mated that in 1731 there were 17,000 Lutherans in Pennsylvania and 15,000 German Reformed. No trustworthy estimate of the number of other so-called German sects in Pennsylvania at that time is available.

Accompanying some of the colonists above mentioned were many French Huguenots, largely from the provinces of Alsace and Lorraine, who had been driven from their country by religious persecution, culminating in the Revocation of the Edict of Nantes in 1685. At the time of their immigration to Pennsylvania these Huguenots came from the Palatinate and adjoining Rhine countries, including Switzerland, in which countries they had originally found refuge. Because of this association with these Protestant neighbors the Huguenots were usually identified and confounded with them. All these emigrants generally settled together when they came to Pennsylvania, the principal exceptions being in the Oley valley, in Berks county, and in the Pequea valley, in Lancaster county, in which almost exclusively Huguenot settlements were made, the former in 1712 and the latter, under the leadership of Madame Ferree, in 1710 and 1712. There is an Alsace township, adjoining Oley township, in Berks county.

In the decades immediately succeeding the settlement of Germantown members of other Continental sects of numerically minor importance than the Mennonites, German Reformed, and Lutherans came to Pennsylvania and settled in the Schuylkill and Delaware valleys and at Germantown and in its neighborhood. One of the most numerous of these minor sects was known as the Dunkards, who came to Pennsylvania in considerable numbers in 1719 and afterwards, coming first to Germantown, where many remained, others going into the valleys above mentioned. Twenty Dunkard families arrived in Philadelphia in the fall of 1719 and others soon followed. This sect was formed at Schwarzenau, in Westphalia, Germany, in 1708, by Alexander Mack, and virtually all his followers came to Pennsylvania, the entire body that remained in Germany coming with him in 1729, in which year he settled in Germantown, where he died in 1735. When the first Dunkards came in 1719 they were accompanied by

Rev. Peter Becker, their pastor. The Dunkard immigrants fraternized readily with their Mennonite neighbors, as there were many points of substantial agreement between the two sects. All the Dunkards seem to have been Germans, which can not be said of the Mennonites, who came from Holland and Switzerland as well as from Germany. Few Roman Catholics came until after the Revolution.

The Schwenkfelders were a small sect of Protestants, originating in Silesia, in the eastern part of Prussia, and were the followers of Casper Schwenkfeld, a Silesian nobleman. Religious persecution drove to Pennsylvania all the Schwenkfelders who survived its cruelties. They landed at Philadelphia in 1734 and settled in the Perkiomen valley, in Montgomery county. Governor John F. Hartranft was descended from a Schwenkfelder immigrant. There are now about two thousand Schwenkfelders in Pennsylvania. A recent writer says: "Montgomery county, the lower end of Berks, and the southern corner of Lehigh contain the only Schwenkfelders in the world." There is now a Schwenkfelder church in Philadelphia, with more than one hundred members. In all there are six churches and eight ministers of this faith in Pennsylvania.

Following the Schwenkfelders came the Moravians, a much more numerous sect, a small body of whom, eleven persons in all, after a short residence in Georgia, came from Saxony to Nazareth, in the Upper Delaware valley, in 1740. They were followed in 1741 by a few others of their faith under the leadership of Count Zinzendorf, a Saxon nobleman and Moravian bishop, who had given the Moravians, on his estate at Herrnhut in Saxony, an asylum from persecution in their own country, Moravia. Their principal settlement in Pennsylvania was at Bethlehem, which was founded in 1741. In that year there were 120 Moravians in Pennsylvania. In the next year fifty-six came and in the following year one hundred more came. In 1747 a Moravian settlement was made at Lititz, in Lancaster county. The Moravians were followers of John Hus, who was burnt at the stake in 1415. They were originally Slavs, but in the changes that came to their sect in Europe and in this country other nationalities were incorporated.

Historians so frequently refer to the Palatinate as the home of many immigrants to Pennsylvania that the reader will be interested in the following historical account of this part of Germany, which we find in *Johnson's Cyclopædia*: "The Palatinate, formerly a political division and independent State of Germany, consisted of two separate territories, respectively called the Upper Palatinate, now forming the northern part of the kingdom of Bavaria, and the Lower Palatinate, situated on both sides of the Rhine, and now forming the southern part of Rhenish Prussia, the northern part of the grand duchy of Baden, and the province of Bavaria, called Rhenish Bavaria. From the eleventh century these two territories belonged together and formed a hereditary monarchy, their ruler being one of the electors of the German Empire, but in 1648, by the treaty of Westphalia, they were separated, the Upper Palatinate falling to Bavaria while the Lower Palatinate continued a possession of the original dynasty. At the Peace of Lunéville in 1801 the Lower Palatinate ceased to exist as an independent State, its territory being divided between Hesse-Darmstadt, Baden, and France, and the only alteration which the Congress of Vienna made in this arrangement in 1815 consisted in transferring to Bavaria that part of the Palatinate which France had occupied."

The Scotch-Irish formed a numerous class of the early settlers of Pennsylvania. They were the descendants of Scotch farmers and of other Scotchmen who had been invited at the beginning of the seventeenth century to settle on confiscated lands in the province of Ulster in the north of Ireland, this invitation being a result of political and religious differences between the British Crown and the Catholic inhabitants of Ireland. They were not Irish in any sense but simply transplanted Scotch. Virtually all these Scotch settlers in Ireland were Presbyterians. At the end of a hundred years, however, the descendants of these Scotch settlers became dissatisfied with the exactions of the British Government and rapacious landlords and then began a stream of emigration from Ulster to the British colonies in America, particularly to Pennsylvania which lasted until long after the middle of the

eighteenth century, and which has had a great influence upon the character of the whole people of our country. One of the first of these emigrant Ulstermen was the Rev. Francis Makemie, a Presbyterian minister, who came to Maryland and Virginia several years before the close of the seventeenth century. In 1698 he preached in the first Presbyterian church in Philadelphia. In 1706 he was the moderator of the first Presbytery of the Presbyterian Church in this country, which met in Philadelphia in that year. He died in Virginia in 1708.

In 1906 a native Scotchman, the Rev. John Watson, author of *Beside the Bonnie Brier Bush* and other well-known books, came to this country and delivered a series of lectures in aid of a fund to provide a monument over the neglected grave of Mr. Makemie in Virginia. While engaged in this work Dr. Watson himself died at Mount Pleasant, Iowa, in May, 1907.

Before 1700 Presbyterians from the north of Ireland began to settle in the three lower counties of the Pennsylvania of that day but which now constitute the State of Delaware, landing at Lewes and New Castle, while others came to Philadelphia. Some of these first Scotch-Irish Presbyterian settlers soon found their way into Chester county, then including the present county of Delaware, and into Bucks and Montgomery counties. We do not hear of any large immigration of Scotch-Irish to Pennsylvania until 1710, about which year large numbers began to arrive, and there was no cessation in this tide of immigration for many years, in some years 5,000 coming annually and in other years many more coming. Between 1720 and 1730 eighteen Presbyterian congregations were organized in Pennsylvania. At the beginning of this decade Scotch-Irish settlements were made in Lancaster county and commenced in York county, and in the next decade they were commenced in the Cumberland valley. There was a great wave of Scotch-Irish immigration to Pennsylvania in the years immediately preceding the Revolution. Many Scotch Presbyterians also came directly to Pennsylvania from Scotland, and naturally, because of a common origin and like religious belief, they at once became iden-

tified with their Scotch-Irish brethren and were themselves usually known as Scotch-Irish.

Historians have given us estimates of the population of Pennsylvania at various periods prior to the taking of the first United States census in 1790. In previous references that have been made in this chapter or in the preceding chapter to the population of the province we have used figures that have seemed most entitled to belief. In 1747 Governor Thomas wrote to the Bishop of Exeter that it then amounted to 200,000, of whom three-fifths were Germans, but he probably overestimated the Germans. In 1763 the total population was estimated at about 280,000. Estimates of the white population of Pennsylvania at the breaking out of the Revolution, not including Delaware, vary from 300,000 to 341,000. The larger estimate was obtained by the Continental Congress in 1776 in a general inquiry that was made by it into the population of each of the colonies. The white population of Pennsylvania in 1775, as reported by Governor Penn to Lord Dartmouth, under date of January 30 of that year, amounted to 300,000. This total falls considerably below the 341,000 above mentioned for the following year. Of the total white population at the beginning of the Revolution Hanna estimates that 100,000 were Scotch-Irish and Diffenderffer says that 100,000 were Germans, in which classification he probably includes not only Germans and Swiss but also Dutch and Huguenots. Accepting the estimate of the Continental Congress as being substantially correct there would remain of the total white population of Pennsylvania in 1776 about 140,000, divided between the English and other Quakers, English Episcopalians, Swedes, and representatives of other nationalities.

The inquiry that was made by the Continental Congress in 1776 showed that, having reference only to the white population, Massachusetts was then the most populous of all the colonies, with a population of 352,000, including Maine, and that Pennsylvania came next, with 341,000, not including Delaware, which was credited with 37,000; Virginia was third, with 300,000, including Kentucky; and New York fourth, with 238,000, including Vermont. In the

census of 1790 the total population of Pennsylvania, including negroes, is given as amounting to 434,373; Massachusetts, 378,787; New York, 340,120; and Virginia, 747,610. Virginia's large negro population in 1790 accounts for its prominent position at that time, when it was the first of all the States in total population, Pennsylvania coming next. North Carolina was the third State in population in 1790, with a total of 393,751, due again to its large negro population, Massachusetts and New York following in the order mentioned. Vermont had been admitted into the Union in 1791 when the census of 1790 was taken. In the following table is given the total population of Pennsylvania at each of the census periods from 1790 to 1900.

Years.	Population.	Years.	Population.	Years.	Population.
1790	434,373	1830	1,348,233	1870	3,521,951
1800	602,365	1840	1,724,033	1880	4,282,891
1810	810,091	1850	2,311,786	1890	5,258,014
1820	1,049,458	1860	2,906,215	1900	6,302,115

Pennsylvania would have shown a larger population in the decades immediately prior to the Revolution if all who settled within its borders had been satisfied with their opportunities and environment. Many Germans, however, pushed on through the Cumberland valley into Maryland and the Shenandoah valley in Virginia, while a considerable number of Scotch-Irish and some Quakers also moved from Pennsylvania to Maryland and other Southern States. Daniel Boone was born in Berks county. John Lincoln, the great-grandfather of Abraham Lincoln, emigrated from Berks county to Virginia about 1750. He was a Quaker. The mother of Abraham Lincoln, Nancy Hanks, was descended from a Berks county family which emigrated first to Virginia and afterwards to Kentucky. Just after the Revolution many of the first settlers in Southwestern Pennsylvania moved to Kentucky, and soon after the beginning of the nineteenth century there was a large emigration of Pennsylvanians to Ohio.

In this chapter and in the preceding chapter we have brought together in chronological order and in sufficient

detail the leading facts which establish the mixed and heterogeneous character of the early settlers of Pennsylvania. No other colony had anything like such a varied population. Nearly all the nations of Northern and Western Europe contributed to the peopling of Penn's province, even far-away Finns coming to the Delaware with the Swedes. The Swedes, Finns, and Dutch, from the northern section of the Continent, were followed by a few Germans and by English settlers under the Duke of York's rule, and these by the English and Welsh Quakers under Penn's leadership, while afterwards came large numbers of Germans, Swiss, Dutch, and French Huguenots from the Rhine provinces and Scotch-Irish from the north of Ireland, with other Englishmen and a few Scotchmen. The Quaker element in the population of Pennsylvania was largely outnumbered in a few decades by the other elements, although Quaker influence in the government of the province continued to be dominant for a still longer period, far along toward the breaking out of the Revolution, but most of the time with the Scotch-Irish and sometimes the Germans in opposition. It was the opposition of these elements that finally broke the Quaker power. It must be said, however, that, notwithstanding the lack of homogeneity among the early settlers of Pennsylvania, the influence of the Quaker element impressed upon the laws and institutions of the province essentially English ideas and precedents, as well as loyalty to the British Crown. This loyalty was weakened and finally shattered, as we know, by events which led up to the Revolution, but this was not done by the Quakers but by the Scotch-Irish and Germans, without whose leadership and aggressiveness Pennsylvania would not have voted for independence. Down to the Revolution Pennsylvania was essentially an English colony in its laws, literature, religious tendencies, political ties, and business connections, as were all the other colonies, even New York yielding to English influence at an early day in its colonial history. But Pennsylvania Dutch was largely spoken in Pennsylvania.

Prior to the Revolution Pennsylvania was most fortunate in securing a population possessing so many di-

verse and excellent characteristics. The English Quakers brought with them marked commercial instincts, and it was mainly due to their enterprise that Philadelphia soon became a centre of trade and commerce as well as a great city. In later years these commercial instincts led them to establish mining and manufacturing enterprises, but still near to Philadelphia. They also engaged largely in farming, but those who became farmers kept close to the Delaware. The Welsh Quakers were nearly all farmers, who at first did not venture very far into the interior. They occupied a large tract of land in Montgomery and Chester counties, called the Welsh Tract, but afterwards they made settlements up the Schuylkill. The Germans, the Dutch, the Swiss, and the Huguenots, if we except the settlement at Germantown, at first settled in the fertile valleys of Eastern Pennsylvania, chiefly as farmers, afterwards moving farther inland. Philadelphia possessed few attractions for them. In a little while they built their own towns—Easton, Allentown, Reading, Lancaster, York, Lebanon, and others. While not neglecting other pursuits in which they have been successful these people and their descendants have made the best farmers the world has ever known, and we owe to their love of the soil and their skill as husbandmen much of the prosperity that Pennsylvania has always enjoyed. Speaking particularly of the Germans, the Dutch, and the Swiss who helped to settle Pennsylvania, as a class their industry, honesty, love of home, and respect for authority have been notable characteristics, and these characteristics have been transmitted to their descendants. The Huguenots were in every way a superior people. The Moravian settlers at Bethlehem, Nazareth, and Lititz, a majority of whom were also farmers, early established excellent schools, and these schools exist to-day. Possessed of a missionary spirit they undertook the task of converting to Christianity their Indian neighbors and other Indians, and their efforts in this direction were for a time largely successful but the final outcome was disheartening. No better people have ever lived in Pennsylvania than the Moravians. It is an interesting fact that about fifty years ago a large number

of Moravians emigrated from Germany to Wayne and Pike counties in the northeastern part of Pennsylvania, where they and their descendants have been profitably engaged in the agricultural and other development of that somewhat neglected region.

The Scotch-Irish immigrants are the last that we need to notice. Filled with the spirit of adventure and fearless of consequences they early pushed into the interior of the province, beyond the settlements of the other immigrants we have mentioned, partly because land there was more easily acquired, even if they had sometimes to take it without the formality of securing title from either the Indians or the proprietaries of the province. They were the main factors in the settlement of the Cumberland, Juniata, and Susquehanna valleys—true pioneers, who could not be turned back by frontier hardships and privations or dismayed by the attacks of hostile Indians. At first farmers almost exclusively they soon illustrated their aptness for trade, the mechanic arts, and the learned professions. They founded all the leading towns in Central Pennsylvania, and before the Revolution they had scaled the Alleghenies and joined with Marylanders and Virginians in the settlement of Southwestern Pennsylvania. In a short time they became the leading element in the settlement of that part of Pennsylvania, and their influence in shaping the development of that section has always been controlling.

It is worthy of mention that the Mennonites, Dunkards, and Moravians of Pennsylvania are steadily increasing in numbers, as are also the more numerous German Reformed and Lutherans. The so-called German element in the population of Pennsylvania is not, therefore, at all likely to be lost sight of in the future history of the Commonwealth. In its past history this element has not permitted itself to be overlooked. It has not only been active and enterprising in the development of the industrial resources of the State but it has been active in shaping its political affairs. Of the twenty-five Governors of Pennsylvania who have been elected under the Constitutions of 1790, 1838, and 1873 eight were Germans—Snyder, Hiester, Shulze, Wolf, Ritner, Shunk, Bigler, and Hartranft, while

Beaver is of mixed Huguenot and German extraction and Pennypacker is descended from a Holland ancestor.

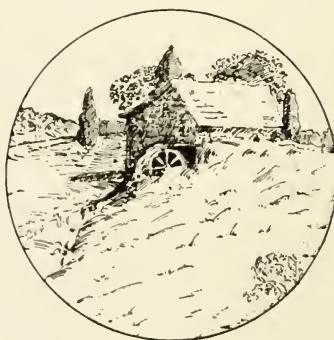
Careful students of Pennsylvania history must always regret that the Swiss, Dutch, Huguenot, and Moravian elements in its population have not received more general recognition. Their identity has been almost entirely lost because of their intimate association with the more numerous German settlers. They not only settled in close contact with the Germans, but most of them before coming to Pennsylvania, owing to the persecutions which had brought them together, had acquired a knowledge of the *Platt-Deutsch* dialect, which was largely the mother tongue of the Palatines and the Swiss Mennonites. Living in the same communities, intermarrying, and speaking the same language as the Germans it was natural that they should themselves be known as Pennsylvania Germans. They were as a rule absorbed by them, although there are to-day whole communities of so-called Pennsylvania Germans which are not German in their origin but Swiss. As an illustration of the absorption of the Swiss, Dutch, Huguenots, and Moravians in the great Pennsylvania German family a late distinguished Pennsylvania jurist was popularly supposed to have been a German and he married the daughter of another prominent Pennsylvanian who was also regarded in his lifetime as a German, but both men were of Huguenot extraction. A careful study of this subject will show that a very large number of the people who are called Pennsylvania Germans are not Germans in their origin but Swiss, Dutch, Moravians, and Huguenots. A large number of the Mennonites in Pennsylvania are descendants of Swiss immigrants. The Swedish element in the population of Pennsylvania, which was at first a considerable factor, is now rarely distinguishable in any way. Welsh ancestry is easily distinguished by family names. Pennsylvania has always had a large and intelligent Welsh population additional to its Welsh Quakers. A large number of Welsh immigrants settled in Cambria county soon after the Revolution, and their descendants are very numerous in that county to-day. The iron industry has in more recent years brought many Welsh immigrants to

Pennsylvania, and so also has our great coal industry. Huguenot ancestry can occasionally be distinguished by family names, but unfortunately many Huguenot names have been either Anglicized or Germanized. This is also true of some Holland names.

The name, Pennsylvania Dutch, has long been used as a synonym for Pennsylvania Germans. Historically inaccurate as is the latter term in embracing large numbers of Pennsylvanians who are not of German origin, it is far more accurate than to designate Germans, Moravians, Huguenots, and Swiss as Pennsylvania Dutch. The latter is now and long has been a serious misnomer, although when originally applied it may have been proper enough. Not only were emigrants from Holland among the earliest settlers on the Delaware but many other Hollanders accepted Penn's invitation and helped to found Germantown and settle the Schuylkill valley. It was entirely correct, therefore, to call them Dutch, as the natives of Holland, or the Netherlands, have always been called. That this name should have been applied to their German neighbors in Pennsylvania was probably due in large part to the universal use at that day of the term *Deutsch* as designating the people of Germany, the Germans themselves so using it. To them the name of their country was *Deutschland*, not Germany, and Germans to-day, when speaking their own language, call their country *Deutschland*. The official name of the German Empire is *Deutsches Reich*. There are to-day in Germany two large and influential trade organizations which are styled respectively *Verein Deutscher Eisenhüttenleute* and *Verein Deutscher Eisen und Stahlindustrieller*. Some native Germans, as already mentioned, speak *Platt-Deutsch*, that is, *Low German*. Most of the Palatines who came to Pennsylvania in large numbers and came early spoke *Platt-Deutsch*, and here again we find a reason for the use of the word Dutch. A Pennsylvania German in our day, when familiarly addressing another of his class, calls him *Deutscher*.

It appears, therefore, that, while the term Pennsylvania Dutch is now a misnomer, it was not so originally and had ample reason for its existence. In our country we

now invariably hear of Germany and not of *Deutschland*. But "use doth breed a habit in a man," and we shall probably hear of the Pennsylvania Dutch for many years to come. We shall certainly hear the Pennsylvania Dutch dialect spoken in many Pennsylvania counties. There are to-day hundreds of communities in Pennsylvania in which this dialect is habitually spoken to the exclusion of English. It is really a corruption of the original *Platt-Deutsch*, as it contains many English words and some words of French and other origin. Very little Pennsylvania Dutch literature is now published, although a generation or two ago some notable publications in Pennsylvania were printed in this dialect, and a few columns in country newspapers are still so printed. The pamphlet laws of Pennsylvania were once printed in German for the use of justices of the peace and other officials whose mother tongue was Pennsylvania Dutch. The people called Pennsylvania Dutch and the dialect they speak are not, however, confined to Pennsylvania. This State has sent many thousands of its Mennonites and Dunkards to Maryland, Virginia, Ohio, Indiana, and Iowa, and they have taken their South German dialect with them and held on to it.



CHAPTER IV.

REDEMPTIONERS AND OTHER BONDED SERVANTS.

THERE were two classes of white bonded servants who came to Pennsylvania and other colonies, and to Pennsylvania down to the first decades of the nineteenth century,—redemptioners and indentured servants. The first class, by far the most numerous, was chiefly composed of Protestant emigrants from Germany and other European countries who were glad to escape from religious persecution or unfavorable social conditions but who were too poor to pay their passage across the ocean, and hence agreed with the masters of the vessels in which they sailed or with speculators, sometimes called Newlanders, that their personal services were to be sold at the end of the voyage for such periods as would yield sufficient sums to pay the cost of their passage, usually from three to five years for adults, and children for longer periods—often until they were twenty-one years old. The other class, never numerous, was composed of men and women who emigrated from the British Isles and the Continent under conditions which were the same in effect if not in detail as those which applied to the redemptioners, the difference being that those belonging to the indentured class obligated themselves before sailing to serve employers in the colonies for specified periods, these employers or their agents paying the cost of passage of these servants. Diffenderffer and other historians make little distinction between these two classes of indentured or bonded servants. The laws of Pennsylvania recognized both conditions of servitude and imposed penalties for violation of contracts, either by servants or by their masters. Washington purchased the services of redemptioners.

Diffenderffer has found no mention of redemptioners in Pennsylvania statistics relating to servants, but this class was given this name in cotemporaneous literature as well as colloquially. A few years ago a distinguished

Representative in Congress from Pennsylvania, in delivering a eulogy in the House upon the life and public services of another distinguished Representative from the same State who had recently died, referred to his colleague as the son of a redemptioner. Pennsylvania received more redemptioners than any other colony because Penn had made special efforts to attract attention to his province, and because his promise of both civil and religious liberty strongly appealed to those who possessed neither the one nor the other. As Germany, Switzerland, and France were torn with religious and political dissensions it naturally happened that these countries sent many redemptioners to Pennsylvania, as did also England, Scotland, and Ireland. They were called redemptioners because, after they had been sold into temporary slavery, they could regain, or redeem, their freedom with money contributed by their friends or accumulated by their own efforts. The selling of immigrants to pay the cost of their passage came to an end in Pennsylvania about 1831.

It is probably true that a majority of the immigrants who came to Pennsylvania in colonial days as redemptioners and indentured servants were farmers or farm laborers, who soon aided materially to make this province the leader in agriculture among all the colonies, but it is worthy of special notice that many others of these classes were skilled workmen in the various handicrafts of that time. This fact is made plain by the following advertisements which are reproduced by Diffenderffer from Philadelphia newspapers, with many others of similar character. They also prove that many redemptioners came from England, Scotland, and Ireland, as well as from the Continent.

From *The American Weekly Mercury*, November 7, 1728: "Just arrived from London, in the ship *Borden*, William Harbert, Commander, a parcel of young likely *men-servants*, consisting of Husbandmen, Joyners, Shoemakers, Weavers, Smiths, Brick-makers, Bricklayers, Sawyers, Taylers, Stay-makers, Butchers, Chair-makers, and several other trades, and are to be sold very reasonable either for ready money, wheat Bread, or Flour, by Edward Hoone, in Philadelphia." From *The American Weekly Mercury*, February 18,

1729 : "Lately arrived from London, a parcel of very likely English Servants, men and women, several of the men Tradesmen; to be sold reasonable and Time allowed for payment. By Charles Read of Philadelphia, or Capt. John Ball, on board his ship, at Anthony Milkinson's Wharf." From *The American Weekly Mercury*, May 22, 1729 : "There is just arrived from Scotland a parcel of choice Scotch Servants; Taylors, Weavers, Shoemakers, and ploughmen, some for five and others for seven years: Imported by James Coult, they are on board a sloop lying opposite to the *Market Street Wharf*, where there is a boat constantly attending to carry any one on board that wants to see them." From *The American Weekly Mercury*, May 22, 1729 : "Just arrived from London in the ship *Providence*, Capt. Jonathan Clarke, a parcel of very likely servants, most Tradesmen, to be sold on reasonable Terms; the ship now lies at *Mr. Lawrence's Wharf*, where either the Master or the said Lawrence are to be spoke with."

From *The Pennsylvania Berichte*, Philadelphia, August 16, 1756 : "A ship having arrived from Ireland with servants, some artisans, those interested can call on Thomas Gardens, at Mr. Parnell's wharf, or on the Captain, Nathanael Ambler, on the ship. They are Irish." From *The Pennsylvania Staatsbote*, November 9, 1764 : "To-day the ship *Boston*, Captain Mathew Carr, arrived from Rotterdam, with several hundred Germans. Among them are all kinds of mechanics, day laborers, and young people, men as well as women, and boys and girls. All those who desire to procure such servants are requested to call on David Rundle, on Front Street." From *The Pennsylvania Staatsbote*, January 18, 1774 : "There are still 50 or 60 German persons newly arrived from Germany. They can be found with the widow Kriderin, at the sign of the Golden Swan. Among them are two Schoolmasters, Mechanics, Farmers, also young children as well as boys and girls. They are desirous of serving for their passage money."

In the *New England Magazine* for October, 1896, Lewis R. Harley gives the following illustrations of the sale of redemptioners in Pennsylvania, even in Revolutionary times. "Many of the Philadelphia papers contained advertise-

ments like the following: 'Just arrived in the ship *Sally* from Amsterdam a number of German men, women, and children redemptioners. Their times will be disposed of on reasonable terms by the Captain on board, lying near Race Street wharf.' One in the *Pennsylvania Messenger*, April 4, 1776, offers for sale: 'A young girl and maid servant, strong and healthy; no fault. She is not qualified for the service now demanded. Five years to serve.' The same paper, on January 18, 1777, contains the following notice: 'Germans—we are now offering fifty Germans just arrived—to be seen at the Golden Swan, kept by the widow Kreider. The lot includes schoolmasters, artisans, peasants, boys and girls of various ages, all to serve for payment of passage.' As late as September, 1786, the following advertisement appeared in the *Pittsburgh Gazette*: 'To be sold. (For ready money only.) A German woman servant. She has near three years to serve, is well qualified for all household work; would recommend her to her own country people particularly, as her present master has found great inconvenience from his not being acquainted with their manners, customs, and language. For further particulars inquire at Mr. Ormsby's in Pittsburg.'"

The Philadelphia newspapers of the colonial period published rewards for the apprehension of many redemptioners and other bonded servants who had left the service of their masters without leave. As an illustration of another class of advertisements of that day we copy the following from *Dunlap's Pennsylvania Packet*, published at Philadelphia on July 8, 1776, and containing the text of the Declaration of Independence: "June 17, 1776. Now in the gaol of Newcastle the following runaway servants, viz. John Jacob Plowman, who confesses himself to be an indented servant to a certain James Porter, but can not tell where his master lives, as he talks the German dialect. John Langley, about nineteen years of age, who says he belongs to Nathan Shephard, of Cumberland county, West Jersey. Their masters are requested to come and take them away in three weeks from the date hereof, otherwise they will be discharged according to law. Thomas Clark, Gaoler."

Schoolmasters frequently came over as redemptioners. In the *New England Magazine* for June, 1903, Annie Nettleton Bourne mentions that the Reverend John Christopher Kunze writes from Philadelphia on May 16, 1773, of a student who had been at the University of Halle and who wanted to start a Latin school in the city. This young man, Herr Leps, said to Mr. Kunze: "If I could only raise twenty pounds I would buy the first German student who lands here and owes for his passage, put him in my upper room and begin my Latin school, teaching myself and having the servant teach, and so from the fees get my money back."

Colonel R. A. Brock, the accomplished Virginia antiquarian, says that many of the early schoolmasters of the Virginia colony were indentured servants in the families of the planters, which is additional evidence to that already presented to show that many of the immigrants in colonial times who could not pay their passage were above the rank of farm servants. He also says that an act was passed by the British Parliament in 1663 under which the "Moss Troopers of Cumberland and Northumberland," Cromwellian soldiers, were sent to Virginia, where they gave trouble to the authorities. Other writers submit abundant proofs that the British Government in colonial days sent large numbers of convicts and other objectionable persons to the colonies, notwithstanding repeated protests in legal enactments by Maryland, Virginia, and Pennsylvania. Bolles says of Pennsylvania: "As early as 1682 the Provincial Council took steps to prevent the importation of vagabonds and felons, the dregs of the British population who were cast by Great Britain on her colonies without the least regard for their feelings."

As has already been stated Washington purchased the services of redemptioners. In his diary, under the date of June 4, 1786, appears the following entry: "Received from on board the brig *Ann*, from Ireland, two Servant Men for whom I had agreed yesterday—viz.—Thomas Ryan a shoemaker, and Caven Bon—a Taylor, Redemptioners for 3 years Service by Indenture if they could not pay, each, the sum of £12 Sterling which sums I agreed to pay."

Most of the redemptioners who came to Pennsylvania in colonial times were Germans from the Rhine provinces and Switzerland; the others were Huguenots and natives of the British Isles. The Germans from the Palatinate and other Rhine provinces who came to Pennsylvania before the great German exodus in 1717 were, as a rule, able to pay the cost of their passage and provide homes for their families. About 1717 began the immigration of Palatine and other redemptioners. At this period the great majority of the immigrants from the Rhine provinces had been much impoverished by the wars and persecutions of that bloody period and had lost everything but their faith. Diffenderffer, who has made a more thorough study of this subject than any other writer, says that in *The American Weekly Mercury* for September 1, 1720, he had found the earliest record of any ships carrying Palatines. The *Mercury* was the first newspaper to be published in Pennsylvania and it did not appear until 1719. On the above date it said: "On the 30 (arrived) the ship *Laurel*, John Coppel, from Liverpool and Cork, with 240 odd *Palatinate Passengers* come here to settle." These passengers are not mentioned as redemptioners. The same author also says that "the first public notice of the redemptioner traffic" that had come under his notice he had found in an advertisement published in the *Mercury* in 1722, as follows: "Thomas Denham to his good country friends adviseth: That he has some likely servants to dispose of. One hundred Palatines for five years, at £10 a head." After this year many thousands of redemptioners from the Rhine countries and from Great Britain came to Pennsylvania, "great floods of Palatines" coming in some years. After the Revolution their number greatly declined. The total number of redemptioners who came to Pennsylvania is not a matter of record but it was very large.

In the days when redemptioners and other immigrants came to Pennsylvania and other colonies it required great courage to attempt a long voyage, even under the most favorable circumstances, and many who had been tempted to leave the wretched conditions from which they had been promised relief bitterly regretted the step they had

taken. Herded together like cattle in unsanitary ships, which were devoid of every comfort and were often commanded by rapacious captains, whose cruelty to their helpless victims was equaled only by that of the owners of African slavers; with insufficient food, often of the meanest quality; they became an easy prey to malignant diseases and during the long weary voyages many died and were buried at sea. It is amazing that the oppressed people of those days should have possessed the courage to brave the hardships and privations of a long voyage, at the end of which many of them were to voluntarily enter into a state of bondage like that of negro slavery itself. The lot of all these in the land of their birth must have been hard indeed to drive them to a new country under such unfavorable and distressing conditions as those we have briefly described and in the frail ships of that day.

Hessian prisoners of war, captured by the Continental army, were sold into slavery for specified periods by authority of the Continental Congress. For this disposition of prisoners Congress followed the example of England, which had sold many Scotch, Irish, and even rebellious English prisoners, who were sent to the colonies and there resold. Many of the Hessian prisoners were disposed of in Pennsylvania, as the following details will show.

After Elizabeth furnace, in Lancaster county, came into the possession of Robert Coleman in 1776 he cast shot and shells and cannon for the Continental army. On November 16, 1782, appears the following entry to the credit of Congress in one of Mr. Coleman's account books: "By cash, being the value of forty-two German prisoners of war, at £30 each, £1,260;" and on June 14, 1783, the following: "By cash, being the value of twenty-eight German prisoners of war, at £30 each, £840." In a foot-note to these credits Mr. Coleman certifies "on honour" that the above seventy prisoners were all that were ever secured by him, one of whom being returned is to be deducted when he produces the proper voucher. Rupp, in his history of Lancaster county, mentions that in 1843 he visited one of the Hessian "mercenaries" who was disposed of in this manner at the close of the war for the sum of

\$80, for the term of three years, to Captain Jacob Zimmerman, of that county.

There is additional proof of the sale of Hessian prisoners of war by the Continental Congress. Charming forge, in Berks county, which was built in 1749, was bought in 1774 by George Ege. About 1777 Mr. Ege purchased from Congress the services of thirty-four Hessian prisoners, for the purpose of cutting a channel through a bed of rock to supply with water power a slitting mill which he had previously erected. This noted mill-race was one hundred yards long, from twelve to twenty feet deep, and about twenty feet wide. It was cut through a mass of solid slate rock as smoothly as if done with a broadaxe. It was in use until 1887, one hundred and ten years.

Diffenderffer has observed that the German population of Pennsylvania was largely increased by the addition of almost five thousand German (Hessian) soldiers, who deserted from the British army at the close of the Revolution and remained in the State and "scattered among their countrymen throughout Pennsylvania." The opprobrious name of "Hessian mercenaries" has preserved to the present time the infamy of George the Third in hiring from more infamous German princes about 30,000 of their poor subjects to make war upon his own countrymen in the American colonies. The enslaved Germans who were hired to the British king were in no sense to blame, but rather to be greatly pitied for the part they unwillingly played in our Revolutionary struggle. That many of them concluded to remain in Pennsylvania and settle among their countrymen is of itself sufficient evidence of their own love of liberty and of their detestation of the conduct of the princes by whom they had been held in bondage. Diffenderffer says that the exact number of the Germans who were sent to America as soldiers of George the Third was 29,867, of whom 17,313 returned to Europe in the autumn of 1783, leaving 12,554 who did not return, divided as follows: killed and died of wounds, 1,200; died of illness and accidents, 6,354; deserted, 5,000, of whom nearly all settled in Pennsylvania. They were called Hessians because they came from the Hessian States of Germany.

A letter from Mr. Diffenderffer gives us the following additional details: "The Landgrave of Hesse Cassel sent in all 16,992 men, more than one-half of the entire number that came over. The Landgrave made the best bargain with England of all the German Princes. He got £7 4s. 4½d. for every man and an annual subsidy of £108,281 5s., the same to be continued for one year after the return of the soldiers. In addition he insisted on being paid an old claim arising out of the Seven Years War, but which England had disallowed up to that time; it amounted to £41,820 14s. 5d. He was the worst of the lot."

Imprisonment for debt was another form of slavery which prevailed in Pennsylvania until 1842, when it was abolished. It was, of course, a relic of barbarism, but the student of history can not overlook the fact that it existed in Pennsylvania until the first half of the nineteenth century was nearing its close, as did also the barbarous punishment of solitary confinement for criminals as Dickens found it in 1842 in the eastern penitentiary of Pennsylvania and described it in his *American Notes*. In 1705 an act of the General Assembly was passed which provided for the sale of debtors into slavery for specified periods. This act was not repealed until March 20, 1810, one hundred and five years after its passage. Under this act, says Bolles, "if a debtor had no estate he was compelled to make satisfaction by a period of service, not exceeding seven years if he were single and under the age of fifty-three or five years if he were married and under the age of forty-six." Convicted criminals were also sold into temporary slavery. Bolles gives one instance of the operation of this law: "On one occasion a man in Lancaster county stole £14 7s. He received twenty-one lashes and was then sold for £16 to a farmer for a term of six years."

There was another class of white servants in Pennsylvania in colonial days and long afterwards which deserves mention. These were servants indentured to learn trades or to render personal service. They were correctly called servants, because they were not their own masters during the terms of their apprenticeship and could be apprehended if they ran away. In proportion to the total pop-

ulation of the province their numbers were very large. The long periods for which some of these servants were indentured is surprising.

It was a common occurrence, sanctioned by law, for the original purchasers of the services of the redemptioners and of other indentured servants to sell the unexpired time of these servants to others. We give a few examples of these transfers of ownership, which we copy from a very long "account of servants bound and assigned before James Hamilton, Mayor of Philadelphia," in 1745, to be found in the *Pennsylvania Magazine of History and Biography* for 1907. "Elizabeth Hoy assigns Mary Parker to William Morris of the County of Chester for the remainder of her time two years and a half from Nov. 29th, 1745—Consideration £8. Edward Cathrall assigns Adam Stoles his servant to Hugh Roberts of Phila. for the remainder of his time for thirteen years from Feb. 12th, 1738. Consideration £20: customary dues. George Okill assigns Margaret Hackabuck to Thomas Lacey, of New Jersey, for the remainder of her time eight years from Nov. 3rd, 1743. Consideration £14: customary dues. Abigail Petro assigns Mary Murray to William White of Kent Co. for the remainder of her time, four years from April 10th, 1745. Consideration £13: customary dues."

The same "account of servants bound and assigned" from which we have above quoted contains these illustrations of the apprenticeship system in colonial days:

"Phillis Harwood, in consideration of £2: 3: 8 paid Joseph Scull and sundry other small sums of money paid for her use and at her request by Allmer Grevile, indents herself a servant to said Grevile for four years from this date, customary dues. William Musgrove, Jr., by consent of his father Wm. Musgrove, indents himself a servant to Aylmer Grevile, of Phila., for five years from this date; is to be taught to read, write, and cypher, and at the end of his time is to have five pounds in money and a new suit of clothes. Jonathan Hurst, Jr., by consent of his mother Anne Hutchins, indents himself apprentice to James Gottier, of Phila., cooper, for eight years from this date, to have six months day schooling and six months

evening schooling to learn to read, write, and cipher, to be taught the trade of cooper, and at the end of his time to have two suits of apparel, one of which is to be new. John Warner, son of John Warner, with consent of his father, indents himself apprentice to John Peel, mariner, for six years from April 29th, 1746, to be taught the art or mystery of a mariner, and at the end of his time to have two suits of apparel, one whereof to be new. Maria Rody, with consent of her mother-in-law, Catherine Rody, and in consideration of £7, paid said Catharine by Nicholas Crone of Bucks county, indents herself servant to said Nicholas for seven years and a half from this date, to have customary dues. Nathaniel Falkner indents himself apprentice to Joseph Rivers, of Phila., mariner, for seven years from this date, to be taught the art of navigation, and at the end of the time to have one new suit of apparel. James Kelly, with the consent of his father Edward Kelly, indents himself apprentice to Joseph Sauls of Phila., chairmaker, for eight years and seven months from May 21st, 1746, to be taught the trade of a chairmaker and spinning-wheel maker, and to read, write, and cipher."

It is very apparent from a survey of all the facts that have been presented in this chapter that the redemptioners and others in Penn's province who were born to poverty were not as free men and women as colonial traditions would lead us to believe, nor did they possess the ordinary comforts of life as poor people do in our day. Whatever may be said of the ideal life of our colonial ancestors it was very far from being an illustration of the proposition that "all men are created equal."



CHAPTER V.

NEGRO SLAVERY IN PENNSYLVANIA.

PENN obtained the charter for his province in 1681, and in 1682 the three counties of Kent, Newcastle, and Sussex, now forming the State of Delaware, were formally united to Pennsylvania, and this union lasted until the Revolution. In 1664 there were negro slaves at New Amstel, now Newcastle, Delaware, New Amstel being a Dutch settlement about ten years old at that time. In that year the Duke of York's men, under the command of Sir Robert Carr, after the conquest of New Amsterdam, compelled the Dutch of New Amstel to surrender, and "the cows, oxen, horses, and sheep of the settlers were seized," says Jenkins. The same authority adds: "More important than the quadrupeds were a number of negro slaves, who also fell prize to the Englishmen. There were some sixty or seventy of these. They had reached Manhattan in the *Gideon*, a slave ship, with over two hundred more, just before the arrival of the English fleet, and barely escaped capture there, Peter Alrich having hurried them across the North river and thence overland to New Amstel. They were now divided among the captors, and Carr promptly traded some to Maryland. In his report a few days after the capture he says: 'I have already sent into Maryland some Neegars which did belong to ye late Governor at his plantation above, for beefe, pork, corne, and salt, and for some other small conveniences which this place affordeth not.'"

That negroes were enslaved in Penn's province, not including Delaware, before Penn visited it is shown in the following extract from a letter from James Claypoole, of England, in 1681, to a friend in Pennsylvania: "I have a great drawing on my mind to remove with my family thither, so that I am given up, if the Lord clears my way, to be gone next spring. Advise me in thy next what I might have *two negroes* for, that might be fit for cutting

down trees, building, ploughing, or any sort of labor that is required in the first planting of a country." The following provision in the constitution of the Free Society of Traders, which was organized by Penn in England for trading purposes before his departure for his province in 1682, and of which company he was a member, furnishes proof that Penn himself gave his approval to negro slavery: "Black servants to be free at fourteen years end on giving to the society two-thirds of what they can produce on land allotted to them by the society, with stocks and tools; if they agree not to this to be *servants till they do*." Penn himself owned a few slaves who were employed on his estate at Pennsbury, Bucks county, Pennsylvania. It should not, however, be inferred that Penn was at any time an advocate of negro slavery. There is no evidence that he was. So far as he assented to and participated in the buying and selling of negro slaves in his province he simply followed the custom of the times. There were negro slaves in the West Indies and in all the British colonies on the mainland before the granting of Penn's charter.

Before his return to England, after his second visit to Pennsylvania, Penn wrote his will, dated at "Newcastle on Delaware," October 30, 1701. From this document, which was superseded by a later will, we take the following extract, which shows that Penn intended at that time not only to free his slaves at his death but also to provide for the support of one of these slaves and the children of that slave. The will says: "I give to my Servts, John and Mary Sach . . . [indistinct] three hundred acres between them, and my blacks their freedom, as under my hand already; and to ould Sam 100 acres, to be his children's after he and wife are dead, forever, on common rent of one bushel of wheat yearly forever."

After Penn's death in 1718 his widow, Hannah Penn, writing from London in 1720 to her cousin Rebecca Blackfan, thus referred to negro slaves on Penn's estate of Pennsbury, Rebecca Blackfan then living at Pennsbury: "The young Blacks must be disposed of to prevent their increasing Charge. I have offer'd my Daughter Aubrey one, but she does not care for any. I would however have ye like-

lyest Boy reserv'd and bred to reading & sobriety as intending him for my Self or one of my Children; about wch I design to write to J. Logan, for if Sue proves a good Industrious Servant & Sober I would have her ye more tenderly us'd in ye disposal of her Children." The daughter Aubrey above mentioned was Letitia Penn, who was married to William Aubrey.

In Penn's last will, executed in 1712, he does not free the slaves he then owned, but the following extract from a letter addressed by James Logan to Hannah Penn, dated Philadelphia, the 11th day of 3d month, 1721, shows that Logan, probably in answer to the letter which Hannah Penn said above she intended to write to him, regarded as binding the provision in the will of 1701 in which Penn gave freedom to "my blacks:." "Honored Mistress: The Proprietor in a will left me at his departure hence gave all his negroes their freedom; but this is entirely private; however there are very few left. Sam died soon after your departure hence and his brother James very lately. Chevalier, by a written order from his master, had his liberty several years ago, so that there are none left but Sue, whom Letitia claims or did claim as given to her when she went to England, but how rightfully I know not. These things you can best discuss. She has several children. There are, besides, two old negroes, quite worn, that remained of three that I recovered near eighteen years ago of E. Gibbs' Estate, of New Castle Co." There can be no doubt that Penn's wishes as expressed in his will of 1701, which is the one referred to by Logan, were strictly complied with.

After Penn visited Pennsylvania in 1682 and the immigration of English Quakers and others rapidly increased it appears that negro slavery in the province also rapidly increased, so much so that, in 1688, according to Sharpless, the "German Quakers" of Germantown memorialized the Yearly Meeting in a paper still in existence against "buying and keeping of negroes," and in 1696 the same "German Quakers" advised against "bringing in any more negroes." Other protests against negro slavery were made at other Quaker meetings. Sharpless also says that "many

wealthy Friends were slaveholders, and many saw no evil in the established system." Nevertheless, he says, the Yearly Meeting "could not be brought to a definite position" until 1758, when it declared that Friends should set negro slaves at liberty and "make a Christian provision for them." Many slaves owned by Friends were accordingly liberated but others were kept in bondage. In 1774 a further protest against slavery was made by the Friends, and in 1776 it was declared at the Yearly Meeting that all negroes held in slavery by the Friends should be set at liberty. Meanwhile attempts were made by others as well as Quakers to secure the abolition of slavery in Pennsylvania, but all failed until 1780, when an act of the General Assembly to accomplish its gradual abolition became a law.

During the entire colonial period of Pennsylvania negro slavery was recognized as a part of the social order of the times, as it was in all the other colonies, but there were not at any time many negro slaves in Pennsylvania, only a few thousand, and these were generally well treated, although the laws relating to all servants, both white and black, dealt with the latter with particular severity. Diffenderfer quotes an act of the General Assembly which was passed in 1700, "for the better regulation of servants," which provided, among other things, certain penalties to be imposed upon servants who should embezzle their masters' or owners' goods, and then adds: "and if the Servant be a black he or she shall be severely whipt in the most Publick Place of the Township where the Offence was committed." The advertising columns of the provincial newspapers of Pennsylvania contain many offers of rewards for the apprehension of runaway slaves, showing that the negroes were not always satisfied with their condition. These newspapers also contain many advertisements of negroes for sale. Two of these, published about 1760, we copy below from McMaster, one of which shows that the slave trade existed in Pennsylvania at that time. We quote literally. One reads: "Lately imported from Antigua and to be Sold by Edward Jones in Isaac Norris's Alley, A Parcel of Likely Negro Women &

Girls from thirteen to one and twenty Years of age, and have all had the Small-Pox." The other reads: "To Be Sold, Two very likely Negroe Boys. Enquire of Capt. Benjamin Christian at his House in Arch-Street."

Philadelphia had its "slave market." It was located at the southwest corner of Front and Market streets. Watson says of it: "The original building was erected in 1702. It was first used as a coffee-house in 1754 by William Bradford, the famous provincial printer. There was a covered shed connected with it, vendues of all kinds were regularly held, and often *auctions of negro slaves*, men, women, and children, were held there."

Pittsburgh also had negro slaves who would sometimes run away and others who were sometimes offered for sale. Chapman writes: "In turning over the files of the old newspapers, for example the old *Gazette*, right here in Pittsburgh, it is startling to come across repeated advertisements in regard to slaves, where they seem to have been as common as the advertisements of stray horses and merchantable oxen. Indeed in one of them Colonel Gibson, at Fort Pitt, offers to take in payment for a certain negro woman, who is described as an 'excellent cook,' produce or cattle of any kind. And Mr. Thomas Girty's 'negro fellow' Jack figures more than once in the columns of the old newspaper as a runaway for whose apprehension a reward will be paid." As the *Gazette* was not founded until 1786 the occurrences noted above could not have happened until after that year. The negroes referred to were held in bondage, notwithstanding the act of 1780 for the gradual abolition of slavery. It continued in slavery those who were then slaves, as will now be seen.

An act of the General Assembly, approved by Governor Snyder on February 28, 1810, provided that the laws of Pennsylvania from 1700 to 1810 should be compiled and published in four volumes. This compilation was made and published and is known to the legal profession as "Smith's Laws." From the first volume of these laws we take the following liberal extracts from "an act for the gradual abolition of slavery," passed March 1, 1780, before the struggle with Great Britain for national independ-

ence had come to an end, but when the end which came a few years later was foreseen by the colonies or at least confidently hoped for. They embrace the eloquent preamble to the act, written by Judge George Bryan, which breathes a spirit of Christian fellowship that should have had wider recognition than it received at that day. Seven years after the passage of the act referred to the Constitution of the United States permitted slavery to continue and legalized the slave trade until 1808, when it was to be abolished. Few legislative enactments contain sentiments so lofty or reasons for their existence so eloquent as the preamble to this act, which we give in full as follows :

“ When we contemplate our abhorrence of that condition to which the arms and tyranny of Great-Britain were exerted to reduce us, when we look back on the variety of dangers to which we have been exposed, and how miraculously our wants in many instances have been supplied, and our deliverances wrought, when even hope and human fortitude have become unequal to the conflict, we are unavoidably led to a serious and grateful sense of the manifold blessings which we have undeservedly received from the hand of that Being from whom every good and perfect gift cometh. Impressed with these ideas we conceive that it is our duty, and we rejoice that it is in our power, to extend a portion of that freedom to others which hath been extended to us, and release from that state of thralldom to which we ourselves were tyrannically doomed, and from which we have now every prospect of being delivered. It is not for us to inquire why, in the creation of mankind, the inhabitants of the several parts of the earth were distinguished by a difference in feature and complexion. It is sufficient to know that all are the work of an Almighty hand. We find, in the distribution of the human species, that the most fertile as well as the most barren parts of the earth are inhabited by men of complexions different from ours and from each other ; from whence we may reasonably, as well as religiously, infer that He who placed them in their various situations hath extended equally his care and protection to all, and that it becometh not us to counteract his mercies. We esteem it a pe-

culiar blessing granted to us that we are enabled this day to add one more step to universal civilization by removing, as much as possible, the sorrows of those who have lived in undeserved bondage, and from which, by the assumed authority of the kings of Great-Britain, no effectual legal relief could be obtained. Weaned by a long course of experience from those narrow prejudices and partialities we had imbibed we find our hearts enlarged with kindness and benevolence towards men of all conditions and nations; and we conceive ourselves at this particular period extraordinarily called upon, by the blessings which we have received, to manifest the sincerity of our profession and to give a substantial proof of our gratitude.

“And whereas the condition of those persons who have heretofore been denominated Negro and Mulatto slaves has been attended with circumstances which not only deprived them of the common blessings that they were by nature entitled to but has cast them into the deepest afflictions, by an unnatural separation and sale of husband and wife from each other and from their children, an injury the greatness of which can only be conceived by supposing that we were in the same unhappy case. In justice, therefore, to persons so unhappily circumstanced, and who, having no prospect before them whereon they may rest their sorrows and their hopes, have no reasonable inducement to render their service to society, which they otherwise might, and also in grateful commemoration of our own happy deliverance from that state of unconditional submission to which we were doomed by the tyranny of Britain,

“Be it enacted, and it is hereby enacted, That all persons, as well Negroes and Mulattoes as others, who shall be born within this State from and after the passing of this act, shall not be deemed and considered as servants for life, or slaves; and that all servitude for life, or slavery of children, in consequence of the slavery of their mothers, in the case of all children born within this State from and after the passing of this act as aforesaid, shall be, and hereby is, utterly taken away, extinguished, and for ever abolished.” These provisions affected only children to be born after the passage of the act.

Following the above provisions in the act were others beginning with the stereotyped phrase, "provided always, and be it further enacted," which is so often at variance with the hopes inspired by the first part of legal enactments. It was so in this case. The first addendum provided "that every negro and mulatto child, born within this State after the passing of the act as aforesaid, (who would, in case this act had not been made, have been born a servant for years or life, or a slave,) shall be deemed to be, and shall be, by virtue of this act, the servant of such person, or his or her assigns, who would in such case have been entitled to the service of such child, until such child shall attain unto the age of twenty-eight years."

No provision was made in the act for the freedom of those who were slaves at the time of its adoption, and it was expressly provided that the children of slave parents who were born after the passage of the act should themselves be slaves until they had attained the age of twenty-eight years. This provision reflects no credit upon those who voted for it, nor is the whole act in harmony with its preamble. It will readily be seen that the act, instead of abolishing slavery, provided for its long continuance. To repeat: The slave fathers and mothers were not to be freed at all, and children who were slaves at the passage of the act were also to remain slaves for life, while children unborn were to be slaves until they reached the age of twenty-eight years. Other provisions of the act refer to the duties of masters to their slaves, the apprehension and punishment of runaway slaves, the registering of slaves, etc. The emancipation of slaves by their masters was permitted, but this privilege had previously existed.

Negro slaves were employed as laborers at early iron works in Pennsylvania. The following notice of the workmen employed in making iron in Pennsylvania prior to the Revolution is taken from Acrelius's *History of New Sweden*, written about 1756. "The workmen are partly English and partly Irish, with some few Germans. The laborers are generally composed partly of negroes, (slaves,) partly of servants from Germany or Ireland bought for a term of years. A good negro is bought for from £30 to

£40 sterling, which is equal to 1,500 or 2,000 of our dollars, koppar mynt. Their clothing may amount to 75 dollars, koppar mynt, their food, 325 ditto—very little, indeed, for the year. The negroes are better treated in Pennsylvania than anywhere else in America. A white servant costs 350 dollars, koppar mynt, and his food is estimated at 325 dollars more, of the same coinage." By the phrase "servants from Germany or Ireland" Acrelius meant redemptioners, who have been considered in the preceding chapter.

At Green Lane forge, on Perkiomen creek, in Montgomery county, built in 1733, the workmen employed were at one time chiefly negro slaves. At Martie forge, built in 1755, negro slaves were employed from the beginning in hammering iron, and negroes continued to be the principal workmen at this forge down to the abandonment of active operations in 1883. A long row of stone houses was occupied by the negro workmen. A furnace called Martie was connected with Martie forge, and in 1769 the furnace and forge, with the land and other property appertaining to them, were advertised for sale by the sheriff. Included in the advertisement were "two slaves, one a Mulattoe Man, a good forge man, the other a Negro man," both owned by the company which had been operating the furnace and forge. In 1780 negro slaves were employed at Durham furnace, five of whom escaped in that year to the British lines.

Although there were slaves in Pennsylvania after the passage of the act of 1780 and down to 1840, as will soon be shown, a period of sixty years, they are not often referred to in the newspapers published during that period except when they ran away or were to be sold. As they gradually died off there would be fewer of them to give anybody trouble or to experience a change of masters. A letter dated "Bedford county, Pennsylvania, July 18, 1829," written by Thomas B. McElwee, a farmer, and published in *The American Farmer*, of Baltimore, in that year, says: "We have no slaves nor do we boast of an exemption from that which it would be degradation to be subject to. Such a miserable thing as a slave and such an arrogant thing as the master of a slave are unknown to us. We are all free as the pure unfettered mountain air

we breathe, and we intend to continue so. Nevertheless, some wretched creatures who have escaped from their masters in the neighboring States occasionally seek refuge here, but they are habitually dishonest and lazy."

In Boucher's *History of Westmoreland County* it is stated that Judge John Moore, of that county, who died in 1811, "set free the older of his colored servants and allowed the younger ones to serve an apprenticeship with any of his children they might choose," showing that negro slavery existed in Pennsylvania long after the beginning of the nineteenth century. Two of these "colored servants" were still slaves in the Moore family until after 1825.

Negro slaves were frequently advertised for sale in the Pittsburgh newspapers, or as having run away, down to about 1820. Boucher says that negro slaves were often sold at public outcry in the streets of Greensburg. There was a regular auction-block on the court-house square, and from it the negroes were "knocked down" to the highest bidder. Sheriff Perry sold a number of slaves who had been seized for debt, selling them from this auction-block. As late as 1817 George Armstrong, Greensburg's first burgess, auctioned off a negro girl who belonged to a client of his. Boucher also says that white men and women, known as redemptioners, were also sold from the auction-block in Greensburg. He says that the last sale of this kind of which there is any record occurred on March 5, 1819.

In 1901 the Blairsville (Indiana county) *Enterprise* received from Mrs. Kate Cunningham the original of the following additional reminder of negro slavery in Western Pennsylvania, which we copy *verbatim*: "For the sum of Two hundred and fifty dollars to me in hand paid by George Anshutz commission merchant of Pittsburgh I do hereby sell and transfer my black boy Bob to him the said George his heirs and assigns for six years from the first day of January eighteen hundred and thirteen at the expiration of which time the said Bob is hereby declared to be a free man. In witness whereof I hereunto set my hand and seal at Pittsburgh Dec. 25th, 1812. A. Boggs. Witness, Christian Latshaw. Bob was born with Coll. Cook, of Pensvalley Center County formerly Mifflin and Recorded

in Mifflin County. He was sold by Coll. Cook to Doct. Davis, of Bellefonte, by Doct. Davis' Exors to Roland Curtin, and by Roland Curtin to me A. Boggs. He is now about eighteen years of age. A. Boggs."

Mr. Boggs was a pioneer saltmaker in the Conemaugh and Kiskiminitas valleys and George Anshutz was a pioneer ironmaker at Pittsburgh and Laughlinstown and also in Huntingdon county. Roland Curtin was the father of Governor Andrew G. Curtin. The "boy" referred to by Mr. Boggs was the child of negro parents who remained slaves after 1780, and he himself could become free only after he had reached the age of 28 years, unless manumitted. Four years of his legal term of servitude were therefore remitted by Mr. Boggs. He was probably born in 1794.

In the following table we have compiled from the *Compendium of the Ninth Census* (1870) the statistics of the number of negro slaves in each of the thirteen original States as ascertained at the taking of the first census in 1790 and at each succeeding census down to 1840, after which year we find no mention of slaves in Pennsylvania.

States.	1790.	1800.	1810.	1820.	1830.	1840.
New Hampshire	158	8	0	0	3	1
Massachusetts..	0	0	0	0	1	0
Connecticut ...	2,764	951	310	97	25	17
Rhode Island..	948	380	108	48	17	5
New York	21,324	20,903	15,017	10,088	75	4
New Jersey....	11,423	12,422	10,851	7,557	2,254	674
Pennsylvania ..	3,737	1,706	795	211	403	64
Delaware	8,887	6,153	4,177	4,509	3,292	2,605
Maryland	103,036	105,635	111,502	107,397	102,994	89,737
Virginia	292,627	345,796	392,516	425,148	469,757	448,987
North Carolina.	100,572	133,296	168,824	204,917	245,601	245,817
South Carolina.	107,094	146,151	196,365	258,475	315,401	327,038
Georgia	29,264	59,406	105,218	149,656	217,531	280,944

Massachusetts, which does not report any slaves at any of the above mentioned periods, except one slave in 1830, which exception we can not understand, was nevertheless a slaveholding colony and State down to 1780, when the bill of rights of her constitution of that year indirectly abolished slavery, but it was not until 1783 that this provision

was enforced. The large number of slaves in New York and New Jersey will attract attention, while the comparatively small number in Pennsylvania confirms the statement heretofore made that this State never held many slaves, although there have always been many free negroes within its borders. The "lower counties" of Delaware became a slave State. Unlike Massachusetts and perhaps some other colonies Pennsylvania did not enslave Indians, except in one instance, noted by Bolles, when some Tuscarora Indians were brought from North Carolina into Pennsylvania as slaves, and it never sold Indians into slavery outside its boundaries, as Massachusetts did. In 1705 the General Assembly of Pennsylvania, with the Tuscarora incident before it, passed an act prohibiting the importation of Indian slaves from other colonies. Nor did Pennsylvania encourage the slave trade or engage in it to anything like the extent that Massachusetts and Rhode Island did.

The following table gives the negro population of the United States in 1900 in cities having at least ten thousand negroes, according to the census of that year.

Cities.	Negroes.	Cities.	Negroes.
Washington, D. C.	86,702	Kansas City, Mo.	17,567
Baltimore, Md.	79,258	Montgomery, Ala.	17,229
New Orleans, La.	77,714	Mobile, Ala.	17,045
Philadelphia, Pa.	62,613	Pittsburgh, Pa.	17,040
New York, N. Y.	60,666	Birmingham, Ala.	16,575
Memphis, Tenn.	49,910	Jacksonville, Fla.	16,236
Louisville, Ky.	39,139	Indianapolis, Ind.	15,931
Atlanta, Ga.	35,727	Little Rock, Ark.	14,694
St. Louis, Mo.	35,516	Houston, Tex.	14,608
Richmond, Va.	32,230	Cincinnati, Ohio	14,482
Charleston, S. C.	31,522	Chattanooga, Tenn.	13,122
Chicago, Ill.	30,150	Boston, Mass.	11,591
Nashville, Tenn.	30,044	Macon, Ga.	11,550
Savannah, Ga.	28,090	Petersburg, Va.	10,751
Norfolk, Va.	20,230	Wilmington, N. C.	10,407
Augusta, Ga.	18,487	Lexington, Ky.	10,130

The total negro population of the United States in the census year 1900 was 8,840,789, of which large number there were 156,845 in Pennsylvania. Philadelphia and Pittsburgh contained more than one-half of the total num-

ber in Pennsylvania, and a large part of the remainder were in the suburbs of these cities. The total negro population of Allegheny county in 1900 was 27,753. Since the census of 1900 the negro population of Western Pennsylvania has greatly increased, as has also that of Philadelphia. In 1900 Philadelphia had 62,613 negroes.

The claim has been frequently made that the first protest that was made in this country against negro slavery originated with the Friends, or Quakers. This claim will bear examination. The clearest and also the latest account of this really important matter is contained in Pennypacker's *Settlement of Germantown*, published by the Pennsylvania German Society in 1899. Pennypacker says:

"On the 18th day of April, 1688, Gerhard Hendricks, Dirck Op den Graeff, Francis Daniel Pastorius, and Abraham Op den Graeff sent to the Friends Meeting the first public protest ever made on this continent against the holding of slaves. The protest is as follows:

"This is to ye Monthly Meeting held at Rigert Worrells. These are the reasons why we are against the traffick of mens-body as followeth: Is there any that would be done or handled at this manner? viz. to be sold or made a slave for all the time of his life? . . . Now what is this better done as Turcks doe? yea rather is it worse for them, wch say they are Christians, for we hear that ye most part of such Negers are brought heither against their will & consent, and that many of them are stollen. Now tho' they are black, we can not conceive there is more liberty to have them slaves, as it is to have other white ones. There is a saying, that we shall doe to all men licke as we will be done our selves: macking no difference of what generation, descent, or Colour they are. And those who steal or robb men, and those who buy or purchase them, are they not all alicke? . . . In Europe there are many oppressed for Conscience sacke; and here there are those oppressed wch are of a black Colour. . . Oh! doe consider well this things, you who doe it, if you would be done at this manner? and if it is done according Christianity? you surpass Holland & Germany in this thing. This macks an ill report in all those

Countries of Europe, where they hear off, that ye Quackers doe here handel men Licke they handel there ye Cattle; and for that reason some have no mind or inclination to come hither. . . . And we who profess that it is not lawfull to steal must likewise avoid to purchase such things as are stolen, but rather help to stop this robbing and stealing if possibel and such men ought to be delivred out of ye hands of ye Robbers and set free as well as in Europe. Then is Pensilvania to have a good report, in stead it hath now a bad one for this sacke in other Countries. Especially whereas ye Europeans are desirous to know in what manner ye Quackers doe rule in their Province & most of them doe loock upon us with an envious eye. But if this is done well, what shall we say is don evil? . . . This was is from our meeting at Germantown hold ye 18 of the 2 month 1688 to be delivred to the monthly meeting at Richard Warrels.'”

Here follow literally the signatures, according to Pennypacker: “gerret hendericks. derick op de graeff. Francis daniell Pastorius. Abraham op den graef.”

Following the text of the above protest Pennypacker adds the following information, which shows the fate of the effort of Pastorius and his three friends to put a check to slavery and the slave trade in Pennsylvania: “The Friends at Germantown, through William Kite, have recently had a *fac simile* copy of this protest made. Care has been taken to give it here exactly as it is in the original, as to language, orthography, and punctuation. The disposition which was made of it appears from these notes from the Friends' records:

“‘At our monthly meeting at Dublin ye 30 2 mo. 1688, we having inspected ye matter above mentioned & considered it we finde it so weighty that we think it not Expedient for us to meddle with it here, but do Rather comitt it to ye consideration of ye Quarterly meeting, ye tennor of it being nearly Related to ye truth. On behalf of ye monthly meeting. signed, pr. Jo. Hart.’ ‘This above mentioned was Read in our Quarterly meeting at Philadelphia the 4 of ye 4 mo. '88, and was from thence recommended to the Yearly Meeting, and the above-said Derick and the

other two mentioned therein, to present the same to ye above-said meeting, it being a thing of too great a weight for this meeting to determine. Signed by order of ye Meeting, Anthony Morris.'” Pennypacker continues:

“At the yearly meeting held at Burlington the 5 day of 7 mo. 1688. ‘A paper being here presented by some German Friends Concerning the Lawfulness and Unlawfulness of buying and Keeping of Negroes, It was adjudged not to be so proper for this Meeting to give a Positive Judgment in the case, It having so General a Relation to many other Parts, and, therefore, at present they forbear it.’”

Referring directly to the protest Pennypacker says: “The handwriting of the original appears to be that of Pastorius. An effort has been made to take from the Quakers the credit of this important document, but the evidence that those who sent and those who received it regarded each other as being members of the same religious society seems to me conclusive.”

It will be observed that the signers of the above protest were not English Quakers. All were doubtless known as German Quakers. Three of them were Hollanders and one was a German—the two Op den Graeffs, Gerhard Hendricks, and Pastorius. All but Pastorius were originally Mennonites. It will be further observed that the protest was not favorably received by any of the meetings of English Friends to which it was submitted. To claim credit for the Friends for making the first protest against slavery, if by that phrase is meant the English Quakers, is therefore wholly inaccurate. The credit belongs to the three Hollanders and the one German above mentioned, of whom three were Mennonites before they were Quakers. That many of the English Quakers of Pennsylvania were slaveholders has already been shown in this chapter; and it has also been shown that the frequent efforts that were made at the Yearly Meetings of Friends to secure a declaration that Friends should not hold slaves were unsuccessful until 1758—seventy years after the Germantown protest; and it has been further shown that it was not until 1776 that the Yearly Meeting declared that all negroes

held in slavery by Friends should be set at liberty. English Quakers, therefore, as a class did not oppose slavery but permitted it among their own membership, even if they did not distinctly approve it. The credit of the first protest in this country against slavery rightfully belongs to Pastorius and his friends, and this protest was made against the practice of the English Quakers themselves in buying and holding slaves. It was written when the English and Welsh Quakers formed a large part of the population of the province, probably a majority.

In his *Settlement of Germantown* Pennypacker copies an incident from the journal of John Woolman in 1758 which illustrates the aversion of the Mennonites to negro slavery: "A friend gave me some account of a religious society among the Dutch, called Mennonists, and amongst other things related a passage in substance as follows: One of the Mennonists having acquaintance with a man of another society at a considerable distance, and being with his wagon on business near the house of his said acquaintance, and night coming on, he had thoughts of putting up with him, but passing by his fields, and observing the distressed appearance of his slaves, he kindled a fire in the woods hard by and lay there that night. His said acquaintance hearing where he had lodged, and afterwards meeting the Mennonist, told him of it, adding he should have been heartily welcome at his house, and from their acquaintance in former times wondered at his conduct in that case. The Mennonist replied, 'Ever since I lodged by thy field I have wanted an opportunity to speak with thee. I had intended to come to thy house for entertainment, but seeing thy slaves at their work, and observing the manner of their dress, I had no liking to come and partake with thee.' He then admonished him to use them with more humanity, and added: 'As I lay by the fire that night I thought that, as I was a man of substance, thou wouldst have received me freely, but if I had been as poor as one of thy slaves, and had no power to help myself, I should have received from thy hand no kinder usage than they.'" To which we may add that there is no evidence that a Mennonite ever owned a negro slave.

CHAPTER VI.

THE DELAWARE INDIANS.

IT does not fall within the scope of this volume to consider in detail the relations of the early settlers of Pennsylvania to the native inhabitants of the province or to attempt any description of the Indians themselves. This has been done by the historians of Pennsylvania, and the record they have written is full of massacres, burned homes, and proofs of bad faith on both sides. Away from the Delaware the pioneers in the settlement of Pennsylvania were in almost constant conflict with the Indians from about 1750 until after the close of the Revolutionary war. Having mentioned, however, in previous chapters the friendship of the Delawares for the first settlers of Pennsylvania, and particularly for William Penn, it is proper that the sequel of these pleasant relations should be given. It forms a disgraceful chapter in our provincial history.

William Penn's policy of dealing fairly with the Indians was not followed by his sons. Hannah Penn had managed the affairs of the province with great shrewdness and ability after 1712, during Penn's long illness, and after his death until her own death in 1727, when she was succeeded in the proprietorship by her three sons, John, Thomas, and Richard Penn. It was during their proprietorship that an event occurred in 1737 that could not have happened in the lifetime of William Penn, and which has gone into history as "the walking purchase." The historians, particularly Fisher and Sharpless, deal with this episode with great frankness and with much severity. Fisher describes it as follows:

"'The walking purchase' purported to be a confirmation of an old deed made in 1686, and provided for a line starting at Wrightstown, a few miles back from the Delaware, and a little way above Trenton, and running northwest about parallel with the Delaware as far as a man could walk in a day and a half. At the end of the walk

a line was to be drawn to the Delaware, and the land between these lines and the river was 'the walking purchase.' Long before the walk was to be made the proprietors prepared the ground by having the line of walk surveyed and the trees marked so that the walkers should go in as straight a line as possible and lose no time. On the day appointed the walkers, in charge of the sheriff, started promptly at sunrise and were accompanied by men with horses carrying their provisions and blankets, also by some who went as mere spectators and by some Indians who went as representatives of their nation and to see fair play. The men selected to do the walking were the strongest and most active woodsmen that could be found. The Indians soon complained that they could not keep up with them and repeatedly called to them not to run. Finally, toward the end of the first day, being unable to stop the running, the Indians retired and left the white men to conduct the walk as they pleased. It had been generally understood by the Indians that 'the walking purchase' extended only to the Lehigh river, and it was their opinion that a walk of a day and a half would reach only that far. But the walkers passed beyond the river on the first day. They traveled for twelve hours by the sheriff's watch, and when at twilight he suddenly gave the signal that the time was up Edward Marshall, one of the walkers, fell against a tree, to which he clung for support, saying that a few rods more would have finished him. The next half day the walkers reached a point thirty miles beyond the Lehigh, and, when the line was drawn from this point to the river, instead of taking it directly to the river, it was slanted upward for a long distance so as to include the whole of the valuable Minisink country. That this 'walking purchase' was a fraud on the Indians no one has ever doubted. It sank deep into the Indian heart and was never forgotten. As they never forgot the kindness and justice of Penn so they never forgot this treachery of his sons, and in a few years the mutilated bodies and scalps of hundreds of women and children throughout the whole Pennsylvania frontier told the tale of wrong. . . .

"The alienation of the Indians was of course largely the inevitable result of the ambitious designs of France and of the progress of our own race, which is very apt to crush inferior people in its course, but a great deal of the blame rests with Thomas Penn, who was in the province at the time of 'the walking purchase' and directly responsible for it. He was also, through his agents, responsible for the grasping Albany deed of 1754, which sent pretty much all the Pennsylvania Indians over to the French."

Sharpless uses equally plain words of denunciation of Thomas Penn's conduct in connection with "the walking purchase." He says: "In a treaty in 1728 James Logan said that William Penn never allowed lands to be settled till purchased of the Indians. Ten years before he had shown to their chiefs deeds covering all the lands from Duck creek, in Delaware, to the 'Forks of the Delaware,' between the Delaware and Lehigh rivers where Easton now stands, and extending back along the 'Leehoy hills' to the Susquehanna. The Indians admitted this and confirmed the deeds, but objected to the settlers crowding into the fertile lands within the forks occupied by the Minisink tribe of the Delaware Indians. Logan accordingly forbade any surveying in the Minisink country. White settlers, however, were not restrained, and the Indians became still more uneasy. A tract of 10,000 acres sold by the Penns to be taken up anywhere in the unoccupied lands of the province was chosen here and opened for settlement. A lottery was established by the proprietors, the successful tickets calling for amounts of land down to 200 acres, and many of these were assigned in the forks, without Indian consent.

"In order to secure undisputed possession and drive out the Delawares, who it must be remembered had always been more than friendly, a despicable artifice was resorted to, which will always disgrace the name of Thomas Penn. . . . The route was surveyed, underbrush cleared away, horses stationed to convey the walkers across the rivers, two athletic young men trained for the purpose, and conveyances provided for their baggage and provisions. Indians attended at the beginning, but after

repeatedly calling to the men to walk, not run, retired in disgust. Far from stopping at the Leehoy hills they covered about sixty miles and extended the line thirty miles beyond the Lehigh river. Then, to crown the infamy, instead of running the northern line by any reasonable course they slanted it to the northeast and included all the Minisink country. It was a gross travesty on the original purchase, an outrageous fraud on the Indians, which they very properly refused to submit to. They remained in their ancestral homes and sent notice they would resist removal by force. There unfortunately seems to be no doubt of the iniquity of the transaction. There is the testimony of at least two witnesses to the walk. It appears to have been a common subject of remark. Indifferent men treated it as sharp practice, and honest men were ashamed." But, says Sharpless, "the outrage did not stop here." The proprietaries, having determined to eject the Delaware Indians from the lands included in "the walking purchase," "applied to the Six Nations, who claimed all the Pennsylvania Indians as their subjects," with the result that the peaceful and the greatly injured Delawares were driven by the Iroquois from their homes along the Delaware river to Wyoming, Shamokin, and other interior places. In a little while they became implacable enemies of the white settlers, and with the torch and the tomahawk wreaked their vengeance upon the race that had not only supplanted them but had treated them with flagrant injustice and base ingratitude. This was the end of Penn's peaceful policy toward the Delawares.

On July 7, 1764, it was thought to be necessary for the professedly Christian government of Pennsylvania, represented by John Penn as governor, a grandson of William Penn, to issue a proclamation offering the following bounties for the capture, or scalp, in proof of the death, of an Indian: for every male above the age of ten years captured, \$150; scalped, being killed, \$134; and for every female Indian enemy, and every male under the age of ten years, captured, \$130; for every female above the age of ten years scalped, being killed, \$50." (See Gordon's *History of Pennsylvania*.)

Until after "the walking purchase" there was never any serious trouble between the settlers on the Delaware and any Indian tribe, except the massacre at Swanandael, which seems not to have been the work of the Delawares. In 1728 there was some trouble in the Schuylkill valley with a small band of Shawnese, but no lives were lost on either side. Pennypacker, in the *Pennsylvania Magazine of History and Biography* for January, 1907, after describing the affair, says: "Altogether five of the settlers and several of the Indians had been wounded more or less seriously, but notwithstanding the wild rumors none were killed. It is interesting as the only engagement with the savages which ever occurred in the vicinity of Philadelphia."

Driven to Western Pennsylvania by influences that they could not resist, the Delawares and the Shawnese were almost constantly at war with the whites until both tribes and other Indians were driven out of Pennsylvania. Practically all the Indians disappeared from Pennsylvania after the treaty of Fort Stanwix in October, 1784, by which the Iroquois surrendered to Pennsylvania all the northwestern part of the State. Incursions of Indians into the settled parts of Western Pennsylvania continued, however, for several years. The burning of Hannastown, the county-seat of Westmoreland county, had occurred in 1782. In the same county Mrs. Massey Harbison and her three children were captured by the Indians in 1792 and two of the children were massacred. In 1794 Captain Andrew Sharp, of Indiana county, was shot and killed by "seven Indians" while descending the Kiskiminitas river in a boat with his family and others. In the same year James Dickson was fired upon by Indians while hunting his cows in Crawford county and seriously wounded. Half-breed Indians and some of full blood who were peaceably disposed were permitted to remain in Warren county, on the Allegheny river, just below the New York State line. Mr. Rhoads says: "Of the existing Indians which represent the ancient occupants or claimants of Central Pennsylvania there were 98 Senecas and Onondagas living in 1890 on the Cornplanter Reservation in Warren county."

CHAPTER VII.

PHYSICAL CHARACTERISTICS OF PENNSYLVANIA.

IN Cæsar's *Commentaries on his Wars in Gaul*, with which all historical students are familiar, it is stated that "the whole country of Gaul is divided into three parts," and that these parts are separated only by boundaries which are formed by rivers. Pennsylvania is also divided into three parts, which may be described as the eastern, central, and western sections. Their boundaries are strongly marked and they are distinctly defined in every good map of the State. They are more marked and impressive than the boundaries which divided Gaul into three parts. It is of interest to add that these sections were occupied by white settlers at three different periods and in the order above mentioned. The eastern part extends from the Delaware river to the eastern branch and the main stem of the Susquehanna river; the central part extends westward from the Susquehanna to the summit of the Alleghenies at Cresson and corresponding points; and the western part extends from the crest of the Alleghenies to the western limits of the State. Bedford and Altoona, at the eastern base of the Alleghenies, are in the central division of Pennsylvania as we have above described it.

An examination of a good map of Pennsylvania will show that the State forms almost an exact parallelogram, touching the waters of the Delaware on its eastern boundary and extending to Ohio and West Virginia on the west and to Lake Erie on the northwest, with straight lines forming its northern and southern and western boundaries; that throughout nearly its whole extent it is traversed by numerous mountain ranges of the Appalachian system, all having the same general direction from northeast to southwest; that it is remarkably well watered by large rivers and their mountain tributaries; that it has very few lakes, most of which are but little larger than ponds; and that between its mountain ranges are many

valleys of considerable extent, the most noted being the Schuylkill, Wyoming, Chester, Lebanon, Cumberland, Juniata, Ligonier, Monongahela, Allegheny, Shenango, and Ohio valleys. Many of the mountain ranges of Pennsylvania lead up to extensive and fertile plateaus upon which may be found well-tilled farms and attractive and prosperous towns and villages.

In natural resources Pennsylvania is the richest State in the Union. It is a great agricultural State as well as the leading producer of anthracite and bituminous coal, natural gas, and other natural products. A large part of the State is underlaid with limestone, and its influence upon the fertility of the soil was recognized by the early settlers. It was long the principal producer of iron ore.

Most of our country is rich in magnificent scenery of hill and dale, mountain and valley, forest and lake and river, but nowhere is there to be found a greater or more pleasing variety of scenery than in Pennsylvania. Especially may this be said in those seasons of the year when the primeval forests which have not been seriously invaded by the woodman's axe and the lumberman's saw-mill present to the eye long stretches of the densest and greenest foliage. And, then, if we keep away from the smoke of the mill and the factory and the coke oven, there will be added the necessary accompaniment of all beautiful scenery, a clear sky overhead, which William Penn found in 1683 and described in a letter written in that year to the Duke of Ormonde, to which we will presently refer.

Pennsylvania has hundreds of scenes of varied beauty that would well repay a visit from any American or European tourist—some rugged and grand, others quiet and restful, but all supremely beautiful, especially in the summer and autumn seasons of the year. The wonder is that the lines of railroad which run through the most picturesque sections of the State are not more patronized by American tourists in these seasons than they are. Many of our tourists go to Europe knowing very little of the unsurpassed scenery of their own country. And yet, when American men and women of intelligence and artistic taste have the good judgment to travel through any part

of our country for the purpose of studying and enjoying its scenery, they never fail to praise it. A ride from Philadelphia to Pittsburgh over the Pennsylvania Railroad, or from Philadelphia to Harrisburg by way of the Schuylkill and Lebanon valleys, or up the Delaware valley, or through the historic Wyoming valley, will reveal many extensive prospects of graceful woodland alternating with cultivated fields and broad meadows as level almost as a western prairie, with constant glimpses of mountain ridges, and frequently of quiet streams to emphasize the fact that no landscape is perfect without a lake, or river, or even a rivulet. The scenery above referred to is typical of that of the whole State—placid beauty on the one hand, rugged grandeur on the other.

The journal of Rufus Putnam, who traveled with some friends from his home in Connecticut to Marietta, Ohio, in 1794 and 1795, describes in glowing terms the scenery of the Allegheny mountains in Southwestern Pennsylvania as he admiringly beheld it in December, 1794, while crossing these mountains from Somerset county to Bedford county. He says that from the top of a high mountain he looked down into a vast valley, the whole constituting “a most delightful landscape,” which he describes, and then adds: “In short, the one comprehensive view was the most picturesque that my eyes ever beheld.” The valley referred to was the upper part of the Juniata valley, threaded by the Raystown branch of the “Blue Juniata.”

In the letter from William Penn to the Duke of Ormonde, written in 1683, to which we have already referred, Penn describes as follows the surface of Pennsylvania that he had seen, the crops that the land would produce, the climate, and the flora and fauna with which he had become acquainted. We quote from *Notes and Queries*. He says:

“I thank God I am safely arrived in the province that the providence of God and bounty of the king hath made myne, and which the credit, prudence, and industry of the people concerned with me must render considerable. I was received by the ancient inhabitants with much kindness and respect and the rest brought it with them. There may be about four thousand soules in all. I speak, I think,

within compass. We expect an increase from France, Holland, and Germany, as well as our native country.

“The land is generally good, well water’d, and not so thick of wood as imagin’d; there are also many open places that have been old Indian fields. The trees that grow here are the mulberry, white and red, walnut, black, gray, and hickery, poplar, cedar, cyprus, chestnut, ash, sassafras, gum, pine, spruce, oake, black, white, red, Spanish chestnut, and swamp, which has a leaf like a willow and is most lasting. The food the woods yield is your elks, deer, raccoons, beaver, rabbits, turkeys, pheasants, heath-birds, pigeons, and partredges, innumably; we need no setting dogs to ketch; they run by droves into the house in cold weather. Our rivers have also plenty of excellent fish and water fowl, as sturgeon, rock, shad, herring, catfish or flatheads, sheepsheads, roach, and perch, and trout in inland streames; of fowls, the swan, white, gray, and black goose, and brands, the best duck and teal I ever ate, and the snipe and the curlue with the snow-bird are also excellent.

“The aire is sweet and cleare, which makes a sereen and steady sky, as in the more southern parts of France. Our summers and winters are commonly once in three years in extreames; but the winters seldom last above ten weeks and rarely begin till the latter end of December; the days are above two hours longer and the sun much hotter here than with you, which makes some recompense for the sharp nights of the winter season, as well as the woods that make cheap and great fires. We have of grain wheat, maize, rye, barley, oats, several excellent sorts of beans and peas, pumpkins, water and muskmelons, all English roots and garden stuff, good fruit and excellent cider; the peach we have in divers kinds, and very good, and in great abundance. The vine (of severall sorts and the sign with us of rich land) is very fruitful, and tho not so sweet as some I have eaten in Europe yet it makes a good wine, and the worst good vinegar. I have observed three sorts, the great grape that has green, red, and black, all ripe on the same tree, the muskedell, and black little grape which is the best, and

may be improved to an excellent wine. These are spontaneous. Of cattle we have the horse, not very handsome, but good. Cow cattle and hogs in much plenty, and sheep increase apace."

In the same year, 1683, Penn wrote a letter to the Free Society of Traders, dated 16th of 8th month, to be found in Watson's *Annals*, in which he describes the climate, field and garden products, beasts, birds, fishes, etc., of Pennsylvania in terms similar to those used in his letter to the Duke of Ormonde. In both letters the impression is clearly conveyed that the part of Pennsylvania lying along the Delaware was very far from being an uninhabited wilderness in 1683.

Penn's favorable opinion of the climate of his province has not been confirmed by the experience of those who have come after him and who have seen more of Pennsylvania than he had become familiar with in 1683. The climate of Philadelphia and the adjacent territory, of which he formed favorable impressions, is, however, much milder than that of the mountain sections of the State. A glance at the map will show that Philadelphia is not only remote from the mountains but that it is farther south than Wheeling, which was formerly known as a Southern city, within slave territory. The climate of Pennsylvania taken as a whole is really very changeable and in the winter months is severe and trying to delicate constitutions, although, as has been stated, its summers and autumns are delightful, except, of course, when the conjunction of high temperature and excessive humidity in the summer months creates great discomfort, especially in the large cities. In Philadelphia, with a population of a million and a half, the combination of high temperature and great humidity is most oppressive and the cause of great suffering. The autumn in Pennsylvania is usually pleasant, even in November, when we have Indian summer, but spring is often delayed until May. The division of the year into seasons in our almanacs is not correct for Pennsylvania or for some other parts of our country. March is not usually in this State a spring month, but a winter month, and April is proverbially capricious and often wintry. And

yet, so changeable and uncertain is the climate of Pennsylvania that in March, 1907, the temperature in Philadelphia rose to 85 degrees Fahrenheit in the shade, while on the 14th of June of the same year snow fell in considerable quantities in several of its mountain counties.

Colonel Buell comments as follows on Penn's favorable opinion of the climate of Pennsylvania: "This would not be recognized as the climate of Philadelphia and its neighborhood at the beginning of the twentieth century. There is probably no locality on earth where the deforestation of the surrounding country has so banefully affected the climate as the tidewater estuary of the Delaware. And these malign conditions seem to culminate at the confluence of the Delaware and Schuylkill. In Penn's time the south winds blew over a primeval forest that covered all South Jersey. The great trees absorbed the humidity which the gulf stream spreads all along its wake, and the southerly and southeasterly breezes reached Philadelphia with all their miasma sucked out of them. Now they blow over half-tide lagoons, back-water creeks, and marshes fetid with rotting vegetation and morbid with malarial germs; or they sift through hot sand barrens, supporting a scrub growth of leafless and half-burned second-crop pine or old fields exhausted by slovenly tillage, baked by a blazing sun or steamed by hot humidity, and covered with a scant shrubbery of dwarf bushes and enfeebled briers wherever the sand-drifts will let shrubs grow. The result is a climate—or rather the total absence of one—that in summer amounts to a vast gridiron for the broiling of mankind, while the so-called spring and autumn are likely to exhibit three changes of season in forty-eight hours. The alleged winter is divided into about three parts slush and one part blizzard. This is as different from the climate Penn describes as darkness differs from light, and it is all due to deforestation."

Colonel Buell's last phrase is too sweeping. There is another cause than deforestation for the excessive humidity of the climate of Philadelphia. In summer some of the deadly humidity of that city and its neighborhood is certainly due to the proximity of the Delaware and

Schuylkill rivers, from the surface of which a vast amount of moisture is lifted into the atmosphere by the sun's hot rays. The sea breezes never reach Philadelphia.

Penn's cousin, Markham, writing home to England in December, 1681, describing Pennsylvania, says: "It is a fine country if it were not so overgrown with woods, and very healthy. Here people live to be over 100 years of age." Nearly all of Pennsylvania when it was first settled by white men was covered with forests. To-day it may still be said of it that it is a heavily wooded section. Most of its mountain ranges are covered with trees, and centuries must elapse before it would be possible to entirely denude these ranges. Throughout the State trees are, indeed, everywhere to be seen. Its authorities are wisely preserving great stretches of native forest which have been purchased expressly that they may not pass into the hands of the destructive lumberman.

The Appalachian system, which embraces all the eastern mountains of the United States from Northern Maine to Alabama, attains its greatest width in Pennsylvania, and that part of it lying in this State has always possessed great interest for geologists. J. D. Whitney says that in Pennsylvania, Virginia, and Maryland "the system has its greatest width and most intricate and interesting topographical features," and that "it is not until Pennsylvania is reached that this part of the system becomes of importance." Of the topography of the Pennsylvania division of the system H. D. Rogers says: "It is a complex chain of long, narrow, very level mountain ridges, separated by long, narrow, parallel valleys. These ridges sometimes end abruptly in swelling knobs and sometimes taper off in long slender points. Their slopes are singularly uniform, being in many cases unvaried by ravine or gully for many miles; in other instances they are trenched at equal intervals with great regularity. Their crests are for the most part sharp, and they preserve an extraordinarily equable elevation, being only here and there interrupted by notches or gaps, which sometimes descend to the water-level so as to give passage to the rivers. In many instances two narrow, contiguous parallel mountain

crests unite at their extremities and inclose a narrow, oval valley, which with its sharp mountain sides bears not unfrequently a marked resemblance to a long, slender, sharp-pointed canoe." J. P. Lesley says: "Nowhere else on the known earth is its counterpart for the richness and definiteness of geographical detail. It is the very home of the picturesque in science as in scenery. Its landscapes on the Susquehanna, on the Juniata, and Potomac are unrivaled of their kind in the world. Equally beautiful to the artist is a faithful representation of their symmetrical, compound, and complicated curves upon a map."

Although Pennsylvania is a mountainous State, with the Appalachian system passing through all of the three divisions already mentioned, it is not noted for such towering elevations as characterize many other States. In the western part of North Carolina and in the eastern part of Tennessee are to be found the highest peaks of the Appalachian system, many of which are more than twice as high as the highest peaks in Pennsylvania. Much higher peaks than are found in Pennsylvania are also to be found in the Green mountains of Vermont, the White mountains of New Hampshire, the extreme northwestern corner of Massachusetts, and in the Adirondacks of New York. Mount Katahdin, in Maine, is also higher than any peak in Pennsylvania. A few years ago it was believed that the highest point in this State was Big Bald Knob, on the line between Somerset and Bedford counties, about fifteen and a half miles northwest from the town of Bedford, its elevation above tidewater being 3,000.7 feet. It has since been determined by the United States Geological Survey that there is at least one point in the Alleghenies in Pennsylvania that is somewhat higher than Big Bald Knob. Blue Knob, in the extreme northern part of Bedford county, is reported by the Survey to be 3,136 feet high. The highest elevations in Pennsylvania which are occupied by towns or settlements are rarely 2,000 feet above tidewater. Somerset is 2,250 feet; Cresson and Ebensburg each 2,022 feet; Gallitzin, 2,165 feet; Berlin, 2,163 feet; and Pocahontas, in the southeastern part of

Somerset county, is 2,660 feet. Chestnut ridge, in Westmoreland and Fayette counties, is said by Professor Lesley to be "the last mountain the traveler, going west, sees this side of the Rocky mountains." Before the traveler reaches the western boundary of Pennsylvania he will see many very high foothills of the Alleghenies, Laurel hill, west of Johnstown, as well as Chestnut ridge, rising to a great height. In the Youghiogheny valley, southeast of Pittsburgh, are very high mountain ridges.

Of the rivers of Pennsylvania it is sufficient to quote the following description: "The Susquehanna, a river of great length, rises far northward, in New York, and takes a devious course through Pennsylvania into Chesapeake bay. The Juniata flows eastward into the Susquehanna, through a region of great beauty. The point where the Delaware breaks through the Blue ridge, known as the Water Gap, is famed for its bold scenery. The river rushes through a deep gorge between perpendicular cliffs more than a thousand feet high. The Delaware forms the eastern boundary of the State and receives the Schuylkill at Philadelphia. In the west the Allegheny river, flowing from the north, and the Monongahela, from the south, unite to form the Ohio, thus opening navigation to the Mississippi." The writer might have added that the Lehigh, as a tributary of the Delaware, the Kiskiminitas and the Clarion, as tributaries of the Allegheny, and the Youghiogheny, as a tributary of the Monongahela, are also important streams. Few Pennsylvania rivers are navigable for any considerable distance without artificial aid.

None of the lakes of Pennsylvania are large, nor, as has been said, are there many of them. They are most numerous in the northern part of the State. Conneaut lake, in Crawford county, is the most important. It is a beautiful sheet of water, about four miles long by about two miles wide. There are two other small lakes in the same county. Probably the next most important lake is Promised Land lake, in Pike county, which is several miles in circumference and a mile or two wide. There are a number of other lakes in Pike county and in Wayne county, which adjoins Pike, that rival in scenic beauty the

famous lakes of Switzerland and Scotland. Harvey's lake, in Luzerne county, is about one and a half miles long by about half a mile wide. As is well known, only a small part of the coast line of Lake Erie, five or six miles long, was included in the original boundaries of Pennsylvania. It was not until 1792 that the triangular piece of land which embraces the present coast line of Pennsylvania on Lake Erie was acquired from the United States for the sum of \$151,640.25. The Indian title to the triangle had been purchased by Pennsylvania from Cornplanter and other chiefs of the Six Nations in 1789 for \$6,000. The triangle embraces 202,187 acres.

Henry Gannett, the geographer of the United States Geological Survey, advises us that revised measurements and computations show that the total area of Pennsylvania amounts to 45,126 square miles, of which 44,832 miles represent the land surface and 294 miles the water surface. Many other States, both old and new, exceed Pennsylvania in area. We are also advised by Mr. Gannett that the extreme length of Pennsylvania from its western boundary at the West Virginia line to the most easterly bend in the Delaware river is 305 miles, and that its width from Mason and Dixon's line northward to the southern boundary of New York is 157 miles.

It is worthy of note that Western Pennsylvania, beginning at the summit of the Alleghenies in Cambria, Somerset, and Bedford counties, is really in the Ohio valley. All its streams flow westward, and their waters, after uniting to form the Ohio river at Pittsburgh, eventually reach the Gulf of Mexico.

As incidental to the physical characteristics of Pennsylvania its population may be again referred to. The census of 1900 gives the population of Pennsylvania in that year as amounting to 6,302,115, which was only exceeded by that of New York, with a population of 7,268,894. The population of Pennsylvania in 1908 is certainly above 7,500,000. Of this total considerably over 1,000,000 are foreign born.

In connection with the general subject of this chapter we append a list of the sixty-seven counties of Pennsyl-

vania, with the date of their formation by the General Assembly. This list has been verified for this chapter by the Hon. Henry Houck, Secretary of the Department of Internal Affairs of the Commonwealth of Pennsylvania.

1. Adams, January 22, 1800, formed from a part of York.
2. Allegheny, September 24, 1788, formed from a part of Westmoreland and Washington.
3. Armstrong, March 12, 1800, formed from a part of Allegheny, Westmoreland, and Lycoming.
4. Beaver, March 12, 1800, formed from a part of Allegheny and Washington.
5. Bedford, March 9, 1771, formed from a part of Cumberland.
6. Berks, March 11, 1752, formed from a part of Philadelphia, Chester, and Lancaster.
7. Blair, February 26, 1846, formed from a part of Huntingdon and Bedford.
8. Bradford, February 21, 1810, formed from a part of Luzerne and Lycoming. Previous to March 24, 1812, this county was called Ontario, but its name was changed to Bradford on that day.
9. Bucks, one of the original counties of the Province. This county was one of the three original counties established in 1682 at the first settlement of the Province, the other two being Philadelphia and Chester. Bucks county was first called Buckingham, and it was so styled by William Penn in a letter to the Free Society of Traders, written on August 6, 1683, to be found in Janney's *Life of William Penn*.
10. Butler, March 12, 1800, formed from a part of Allegheny.
11. Cambria, March 26, 1804, formed from a part of Huntingdon, Somerset, and Bedford.
12. Cameron, March 29, 1860, formed from a part of Clinton, Elk, McKean, and Potter.
13. Carbon, March 13, 1843, formed from a part of Northampton and Monroe.
14. Centre, February 13, 1800, formed from a part of Mifflin, Northumberland, Lycoming, and Huntingdon.
15. Chester, one of the original counties established at the first settlement of the Province.
16. Clarion, March 11, 1839, formed from a part of Venango and Armstrong.
17. Clearfield, March 26, 1804, formed from a part of Lycoming, Huntingdon, and Northumberland.
18. Clinton, June 21, 1839, formed from a part of Lycoming and Centre.
19. Columbia, March 22, 1813, formed from a part of Northumberland.
20. Crawford, March 12, 1800, formed from a part of Allegheny.
21. Cumberland, January 27, 1750, formed from a part of Lancaster.
22. Dauphin, March 4, 1785, formed from a part of Lancaster.
23. Delaware, September 26, 1789, formed from a part of Chester.
24. Elk, April 18, 1843 formed from a part of Jefferson, Clearfield, and McKean.
25. Erie, March 12, 1800, formed from a part of Allegheny.
26. Fayette, September 26, 1783, formed from a part of Westmoreland.
27. Forest, April 11, 1848, formed from a part of Jefferson and Venango. Part of Venango added by act approved October 31, 1866.
28. Franklin, September 9, 1784, formed from a part of Cumberland.
29. Fulton, April 19, 1850, formed from a part of Bedford.

30. Greene, February 9, 1796, formed from a part of Washington.
31. Huntingdon, September 20, 1787, formed from a part of Bedford.
32. Indiana, March 30, 1803, formed from a part of Westmoreland and Lycoming.
33. Jefferson, March 26, 1804, formed from a part of Lycoming.
34. Juniata, March 2, 1831, formed from a part of Mifflin.
35. Lackawanna, August 21, 1878, formed from a part of Luzerne.
36. Lancaster, May 10, 1729, formed from a part of Chester.
37. Lawrence, March 20, 1849, formed from a part of Beaver and Mercer.
38. Lebanon, February 16, 1813, formed from a part of Dauphin and Lancaster.
39. Lehigh, March 6, 1812, formed from a part of Northampton.
40. Luzerne, September 25, 1786, formed from a part of Northumberland.
41. Lycoming, April 13, 1795, formed from a part of Northumberland.
42. McKean, March 26, 1804, formed from a part of Lycoming.
43. Mercer, March 12, 1800, formed from a part of Allegheny.
44. Mifflin, September 19, 1789, formed from a part of Cumberland and Northumberland.
45. Monroe, April 1, 1836, formed from a part of Northampton and Pike.
46. Montgomery, September 10, 1784, formed from a part of Philadelphia.
47. Montour, May 3, 1850, formed from a part of Columbia.
48. Northampton, March 11, 1752, formed from a part of Bucks.
49. Northumberland, March 21, 1772, formed from parts of Lancaster, Cumberland, Berks, Bedford, and Northampton.
50. Perry, March 22, 1820, formed from a part of Cumberland.
51. Philadelphia, one of the three original counties established at the first settlement of the Province.
52. Pike, March 26, 1814, formed from a part of Wayne.
53. Potter, March 26, 1804, formed from a part of Lycoming.
54. Schuylkill, March 1, 1811, formed from a part of Berks and Northampton.
55. Snyder, March 2, 1855, formed from a part of Union.
56. Somerset, April 17, 1795, formed from a part of Bedford.
57. Sullivan, March 15, 1847, formed from a part of Lycoming.
58. Susquehanna, February 21, 1810, formed from a part of Luzerne.
59. Tioga, March 26, 1804, formed from a part of Lycoming.
60. Union, March 22, 1813, formed from a part of Northumberland.
61. Venango, March 12, 1800, formed from a part of Allegheny and Lycoming.
62. Warren, March 12, 1800, formed from a part of Allegheny and Lycoming.
63. Wayne, March 21, 1798, formed from a part of Northampton.
64. Washington, March 28, 1781, formed from a part of Westmoreland.
65. Westmoreland, February 26, 1773, formed from a part of Bedford, and in 1785 part of the purchase of 1784 was added thereto.
66. Wyoming, April 4, 1842, formed from a part of Luzerne.
67. York, August 19, 1749, formed from a part of Lancaster.

Down to 1800 Lycoming county embraced a large part of Northern and Northwestern Pennsylvania, after which year it became the parent of many counties. At an earlier day Cumberland was the mother of many counties

in Central and Western Pennsylvania. Bedford has also been the mother of many counties. It will be seen that the original name of Bucks county was Buckingham, and that the original name of Bradford county was Ontario, but why it should have been called Ontario is a mystery.

The names of the counties of Pennsylvania have been felicitously chosen. They are all euphonious and nearly all are appropriate. Many of them are properly of English derivation. Others are constant reminders of the services of distinguished soldiers and statesmen of Pennsylvania and the whole country, and particularly in the Revolutionary period. Many are of Indian origin. Not one is borrowed from Greece or Rome. It is noteworthy that only one county, Snyder, has a distinctively German name. Only one, Schuylkill, suggests the Dutch element in the population of Pennsylvania. One, Cambria, is a reminder of the Welsh element. In addition to Fayette county, named after the marquis, two other counties are of French origin, Dauphin and Luzerne. Montour is of mixed Indian and French origin, receiving its name from Catherine Montour, a half-breed. Beaver and Elk counties preserve the names of two of the native animals of Pennsylvania. Fulton county is a reminder that the invention of the steamboat was perfected by a Pennsylvanian. Huntingdon county preserves the name of an English lady, the Countess of Huntingdon, who was a benefactor of the University of Pennsylvania. Two counties, Philadelphia and Lebanon, have Bible names. Columbia, Centre, Carbon, and Forest counties need no explanation. The whole list of the counties contains only beautiful names.

Pennsylvania is also fortunate in having beautiful Indian names for most of its rivers—Lehigh, Lackawanna, Susquehanna, Juniata, Conestoga, Conemaugh, Loyalhanna, Catawissa, Youghiogheny, Monongahela, Allegheny, Kiskiminitas, Ohio, and many others. The names of the rivers of the State are not only euphonious but they wisely preserve the memory of the Indians who lived upon their banks. Indian names have also been given to many Pennsylvania towns and cities—Hokendauqua, Catasauqua, Kittanning, Allegheny, Aliquippa, Monongahela, and others.

CHAPTER VIII.

ANIMAL LIFE IN PENNSYLVANIA.

NEITHER the Indians nor their predecessors, that mysterious people the Mound Builders, were the first inhabitants of Pennsylvania. The beasts of the forest, the birds, the wild fowl, and the fish in the streams were here before these primitive people and they were important factors in the settlement of Penn's province, because they helped materially to furnish food for the first settlers while they were building their homes and opening their farms. The flesh of most of the wild animals that were found in the forests of Pennsylvania, the turkeys and other wild fowl, and the fish were really essential to the very life of the settlers. Penn and other writers in the pioneer age of Pennsylvania repeatedly called attention in their letters to the animal life of the province as an attraction worthy to be mentioned in connection with its fruitful soil and its magnificent forests. They dwelt upon the abundance of elks, deer, bears, squirrels, rabbits, and other animals that were fit for food, and of turkeys and other wild fowl and of all kinds of fish. Wild fruits and nuts also added their stores to the general stock of native food supplies. Plums, grapes, pawpaws, haws, and berries were to be found in many places, while the black and white walnut, the chestnut, and the hickory yielded nutritious nuts in profusion. Indian corn could be grown the first season from seed that was readily obtained from the friendly Delawares. The early settlers and the frontiersmen after them could not want for food to supply their needs. A study of the animal and vegetable life of the colonies will show that no other colony was as rich as Pennsylvania in indigenous life-supporting products of the forest and river. Dismissing the native vegetable products of Pennsylvania there are some details of its native animal life that are worthy of attention.

Penn mentions the elk in his enumeration of the native

animals of Pennsylvania, particularly indicating its presence in the Susquehanna valley. This noble representative of the deer family in Pennsylvania seems, however, to have been most numerous in the northern and northwestern sections of the province. One of the northwestern counties of Pennsylvania is called Elk county. Hundreds of elks have been killed in this county and in adjoining counties. There is an Elk run in Tioga county, and there are Elk townships in Tioga and Warren counties and an Elklick township in Somerset county. Elk licks were numerous in Western and Northwestern Pennsylvania in the early days of the province. In Stone and Cram's *American Animals* (1902) it is said that "in the Eastern States the elk seems to have lingered longest in the wilds of Central Pennsylvania, and men are still living who can remember the killing of the last elk of their several localities about fifty years ago." Another authority says that "the last elk in Potter county was killed in 1856." McKnight says that the last elk killed in Pennsylvania was shot in 1864 "near the Clarion river" by Jim Jacobs, an Indian, but another antiquarian says that the year was 1867. Rhoads says that in the years 1831 to 1837 Seth I. Nelson, a hunter, killed 22 elks in Clinton, Potter, Tioga, and Lycoming counties. The moose does not seem to have inhabited Pennsylvania at any time.

The common varieties of the deer family were found by the early settlers in every part of Pennsylvania, and deer are still found in all the wild and unsettled parts of the State. As they are protected by the laws in certain seasons of the year they would increase rapidly but for the license given to hunters to destroy them in other seasons, not for food, as was necessary and justifiable in the early days, but to gratify a senseless desire to kill these beautiful creatures. One thousand deer were killed in Pennsylvania in 1904. Some of our deerslayers appear to be actuated entirely by no other motive than that which leads an Englishman of a certain class to say to his guest: "This is a fine day; let us go out and kill something." It is not at all likely, however, that deer will become extinct in Pennsylvania, as at least three parks for their

preservation have been established by public-spirited citizens—one in Monroe county, one in Carbon county, and one in Centre county. There are probably others.

While the skins of the deer were largely used by the Pennsylvania pioneers for clothing and for other purposes, as they had been by the Indians, many fur-bearing animals were found in every part of the province and their skins contributed to the comfort of these pioneers—bears, beavers, otters, raccoons, opossums, weasels, minks, squirrels, muskrats, and others. The furs of some of these animals also formed from the first important articles of trade with the Indians and with foreign countries. Brown and black bears were found in considerable numbers in the mountain districts of Pennsylvania, and the beavers appear to have been active on the streams in every part of the province. The trade in beaver skins formed the most important part of the fur trade of the colonists. The otter, with its fine fur, was more rare than the beaver, but the other and smaller fur-bearing animals were everywhere. Every one of the animals mentioned is still to be found in Pennsylvania. Both brown and black bears are killed every year. The otter still lingers in some of the streams in the northern part of the State. It could be found in Pike county only a few years ago, and otters were numerous in Monroe county ten or fifteen years ago. There is at least one colony of beavers in the northeastern part of Pennsylvania. A lone beaver was seen by W. C. McHenry in September, 1899, swimming on the Beaver Dam branch of the South Fork of the Conemaugh river in Cambria county. Squirrels are abundant, and the other animals mentioned are very far from being extinct.

Otters were still found on some of the streams of Southwestern Pennsylvania not many years ago. We have received a circumstantial account of their presence on Redstone creek, which empties into the Monongahela just below Brownsville. A letter from George W. Kelley, of Grindstone, Fayette county, to Dr. J. S. Van Voorhis, of Bellevernon, in the same county, dated September 4, 1905, the original of which is lying before us, gives the following details: "With reference to the otters that I

killed on Redstone creek I will give you exact data of each as I killed them. February 15, 1873, I shot the first one near the old Parkhill mill, and on March 5 shot the second one at the same place. On March 3, 1879, I shot the third one in Cook's dam, two miles above. On January 25, 1881, I shot the fourth one near the Parkhill mill—a large one that weighed 25 pounds. On March 6, 1881, I shot a very large one, weighing over 30 pounds. Its hide, after being stretched, measured 5 feet 2½ inches from tip to tip. On February 27, 1883, I shot the sixth otter. Otters have been known in the Monongahela and Youghiogheny valleys for a number of years. At the present time there are otters in Dunlap's creek, but none in Redstone creek, as there are no fish left in that stream." Dunlap's creek empties into the Monongahela about one mile above the mouth of Redstone.

The colony of beavers in Pennsylvania above referred to, and the only one of which we have any knowledge, was in existence in 1903 near Stroudsburg, in Monroe county, on the farm of Judge James Edinger. The judge had carefully protected the colony from all molestation. The New York *Tribune* for July 5, 1903, says that "Judge Edinger had a law passed at the last session of the Pennsylvania Legislature for the protection of the beavers. The law provides a fine of \$100 or imprisonment for one hundred days for each beaver killed with a gun or caught with a trap, or for having one of the animals in possession, dead or alive." The Monroe county colony is not numerous. It had only recently made its appearance and had built a dam near the site of a beaver dam that was built over a hundred years ago. A letter from Judge Edinger in September, 1907, says that "the beavers are still here and have done considerable cutting this fall."

The early settlers of Pennsylvania found many animals in the forests that were troublesome neighbors and others that were really to be dreaded. Some of these animals, including the bears, have already been mentioned, and to these may be added foxes, panthers, wild cats, and wolves, all of which, except possibly panthers, are still to be found in some of the thinly settled sections of the State. The

newspapers of Pennsylvania contain frequent references to encounters with bears and wild cats, especially in the winter season. In 1903 Joseph Hoffman, who lived near Hazleton, in Luzerne county, killed one of two wolves, and in 1908 another wolf was killed near Hazleton. In 1897 "a mammoth gray wolf" was caught in a steel trap in Somerset county by an old man, Jonathan Queer. In January, 1908, "a large timber wolf" was killed in Greene county. In March, 1904, the commissioners of Cambria county paid bounties on fifty-two pairs of foxes' ears which had been cut from foxes captured in that county during the first seventeen days of that month. In August, 1907, it was stated that Henry Stock, a hunter in Rush township, Dauphin county, had killed sixty-five foxes and fifty-six minks between May 5 and July 31. The woodchuck, or groundhog, is still here, and the porcupine, or hedgehog, is occasionally seen. One of these latter was killed near Geistown, in Cambria county, in 1903. A panther was shot in the northern part of Somerset county about 1865. It was a huge, tiger-like animal, which had carried off bodily a full-grown sheep from a pen in which it had been confined. A male and female panther were killed in Clinton county in 1871.

The feathered inhabitants of Pennsylvania when the white settlers first came to the Delaware were not only found in great variety but in great numbers. We can not learn that any of the species or varieties which were then represented in the forests or lowlands of Pennsylvania or on the bosom of its rivers have entirely disappeared, not even excepting the wild pigeons. Occasional specimens of that noblest of all American birds, the wild turkey, are still to be found in Pennsylvania. In October, 1904, "boys living near New Baltimore, at the foot of the Allegheny mountains, located twenty wild turkeys and shot seventeen." In November of the same year a dispatch from Williamsport said that "wild turkeys are plentiful in Lycoming county, and sportsmen have been bagging them daily since the opening of the season." A wild gobbler was killed in Bedford county in the same year. In October, 1906, a dispatch from Connellsville said that

"the first wild turkey killed in this section this season was brought down on Savage mountain last evening. The bird was a 19½ pound gobbler." The eagle is occasionally seen in Pennsylvania, but it is still rarer than the wild turkey. Pheasants and partridges, wild ducks and wild geese, swans and loons, herons, and crows and hawks and owls are still with us. A large blue heron was captured in Tioga county a few years ago. A swan was shot near Wilmore, in Cambria county, about five years ago.

Wild pigeons were very numerous when Penn first visited his province. Janney quotes the following account of them: "The wild pigeons came in such numbers that the air was sometimes darkened by their flight, and flying low those that had no other means to take them sometimes supplied themselves by throwing at them as they flew and salting up what they could not eat; they served them for bread and meat in one. They were thus supplied, at times, for the first two or three years, by which time they had raised sufficient out of the ground by their own labor." Proud says that the wild pigeons were knocked down with long poles in the hands of men and boys. Wollenweber gives a humorous account of the commotion caused in Berks county about the middle of the last century by an immense flock of wild pigeons. The pigeons created "a dreadful noise" just before daylight which greatly excited the fears of the superstitious, who believed that a great calamity was impending.

Wild pigeons have repeatedly blackened the skies of Pennsylvania within the memory of persons now living. They appeared in Cambria county on January 1, 1876. The *Johnstown Tribune* for Monday, January 3, of that year, said: "On Saturday there were immense flocks of wild pigeons flying over town, but yesterday it seemed as if all the birds of this kind at present in existence throughout the entire country were engaged in gyrating around overhead. One flock was declared to be at least three miles in length by half a mile wide. To-day the wild birds were again on the wing, and a perfect fusillade was kept up for a time on neighboring hills." On January 4 the same paper said: "There were a number of flocks

of wild pigeons on the wing again this morning, and a great many local sportsmen ascended neighboring hills for the purpose of securing a mess of the birds. These pigeons are in excellent condition, and while the craws of some are filled with rice there are many others which have been luxuriating on beech nuts." On January 31 the *Tribune* further said: "Near the farm of Mr. Reynolds, along toward the headwaters of the South Fork, there is what is called a 'pigeon roost,' which means that an immense flock of wild pigeons has located in that place; and although all fly away during the daytime for food and water yet they return early in the evening. Stout limbs on some of the trees were actually broken off by the weight of the birds, which pile one on top of another until it would seem that a pyramid of pigeons had been erected from a point where the first branches project clear to the very top." In the fall of 1878 wild pigeons again appeared in the southern part of Cambria county, but they were not so numerous as in 1876.

Wild honey was one of the food supplies of the early settlers of Pennsylvania. The bees, which were originally swarms from hives that had been imported, would deposit their honey in hollow trees, which, when found, would be secured by the settlers by cutting down the trees. Until the present day "bee trees" in the mountains of Pennsylvania have yielded vast stores of wild honey. In 1903 a bee tree was cut down in Clearfield county which contained 200 pounds of honey. The combs in this tree are said to have been eight feet long. Another bee tree in Western Pennsylvania yielded 94 pounds of honey in 1906. The magnificent sugar maples of that section of the State soon supplied the pioneers with maple sugar, which became an important article of commerce for transportation to the eastern part of the State a hundred years ago.

The fish of Pennsylvania which were found in such abundance in colonial days are rapidly disappearing, owing more to the pollution of the streams than to the work of the fishermen. In most of the streams of the State fish in appreciable numbers are no longer to be found, but in the first half of the last century they were

filled with the choicest of fish. In the Susquehanna and Juniata rivers shad were caught in the spring of the year in large numbers. They are still caught in these streams and in the Delaware, a few shad having been taken in the Juniata in 1907. Trout were once caught in every part of the State. West of the Alleghenies pike were found in all the large streams, some of them attaining a weight of 20 and 25 and even 30 pounds. In the Conoquenessing creek, in Butler county, about 1880, United States Marshal Stephen P. Stone, of Beaver, caught a pike which weighed 23 pounds. Catfish, black bass, perch, suckers, and mullets were found in the streams of Pennsylvania and are still caught. Herring are still taken in the Delaware. In the Ohio river below Pittsburgh catfish, sturgeon, and some other fish of large size are less numerous than formerly. Eels are still found in the Susquehanna and Juniata rivers and in some other streams east of the Alleghenies. In the streams west of the Alleghenies in Pennsylvania few eels have ever been found. Successful efforts are being made to replenish the streams of Pennsylvania with bass and other fish.

As relevant to the industrial history of Pennsylvania the foregoing summary of the native food products which contributed to the support of the Indians and afterwards to the support of the early settlers and of the pioneers who pushed into the central and western parts of the province, and also such mention as we have made of the fur-bearing animals, properly find a place in this volume. In the next chapter the most interesting of all the animals of provincial Pennsylvania will be considered.



CHAPTER IX.

BUFFALOES IN PENNSYLVANIA.

It is a curious fact that the existence of the buffalo in Pennsylvania in colonial times or at any time before the coming of the white settlers can not be proved by any evidence based on the preservation of buffalo skulls or whole skeletons which have been found within the borders of the State. They are not to be seen anywhere. Professor Spencer F. Baird has mentioned the existence of fossil remains found near Carlisle which he says may have been buffalo bones. Other authorities definitely record the finding of buffalo bones in Pennsylvania. In Rhoads's *Mammals of Pennsylvania and New Jersey* (1903) he mentions buffalo bones which have been found in Pennsylvania and are preserved at the Academy of Natural Sciences in Philadelphia. Other proofs that the buffalo once existed in this State are abundant.

Early French explorers in the region south of the Great Lakes mention the presence of "wild bulls," "wild beeves," and "vast herds of wild cattle" in the territory they visited, and some of these buffaloes were seen on the southern shore of Lake Erie, which would include Pennsylvania. Vaudreuil, describing this lake in 1718, says: "There is no need of fasting on either side of this lake; deer are to be found there in great abundance; buffaloes are found on the south but not on the north side." Colonel James Smith was captured by the Indians in Pennsylvania in 1755, when a boy, and taken to Ohio, where he remained a captive until 1759. Forty years after his release he published a circumstantial account of his captivity, which is an American classic. In this account Colonel Smith frequently mentions buffaloes as forming part of the staple diet of the Indians with whom he lived in the eastern part of Ohio. He killed one himself. In 1770 Washington visited what is now known as West Virginia, and in the journal of his trip he speaks of receiving from

"an old acquaintance," Kyashuta, "a quarter of very fine buffalo." He also mentions a buffalo path, "the tracks of which we saw." On November 2, recording his exploration of the Great Kanawha river, he writes: "Killed five buffaloes and wounded some others, three deer, &c. This country abounds in buffaloes." He says of a creek near which he encamped that "on this creek are many buffaloes, according to the Indians' account." In 1784 Washington paid a visit to Western Maryland, Western Pennsylvania, and what is now West Virginia, and in his diary of that journey he refers to buffalo paths and salt licks frequented by buffaloes in the vicinity of Morgantown, which is only a few miles south of the Pennsylvania line.

When a young man, soon after the close of the Revolution, Albert Gallatin was engaged in land explorations in the western part of Virginia. In an article on the Indians and their means of subsistence, contributed by Mr. Gallatin in 1848 to the *Transactions of the American Ethnological Society*, that eminent man, referring to buffaloes, says: "The name of Buffalo creek, between Pittsburgh and Wheeling, proves that they had spread thus far eastwardly when that country was first visited by the Anglo-American. In my time (1784-1785) they were abundant on the southern side of the Ohio, between the Great and the Little Kanawha. I have during eight months lived principally on their flesh." He also says of the buffaloes that "they had at a former period penetrated east of the Allegheny mountains."

Dr. Bausman, in his *History of Beaver County, Pennsylvania*, quotes Colonel Brodhead as writing to Washington in 1780 that he is "sending hunters to the Little Kanawha to kill buffaloes," and in Craig's *History of Pittsburgh* we read that Colonel Brodhead, in a letter to Rev. D. Zeisberger, under date of December 2, 1780, "proposes that he should send fifteen or twenty best hunters to Little Kenhawa, to kill buffalo, elks, and bears, to be salted down in canoes made for that purpose." Dr. Bausman also quotes this passage from Schoolcraft: "There was added for all the region west of the Alleghenies the bison of the West (*Bos Americanus*), the prominent object

and glory of the chase for the tribes of these latitudes." The common name of bison is buffalo.

In General Peter Muhlenberg's journal of his trip to the Falls of Ohio in 1784 he writes, under date of April 5, that the boat on which he had taken passage on the Ohio river "came to shore on the Indian side," the Ohio side, where "a hunting party turned out and killed one buffalo and one deer, but both very poor." On the 6th the general writes that his boat again landed "on the Indian shore" and adds that "we killed three buffaloes but found them too poor to eat, so that we determined to kill no more." He further says that "the winter must have been very severe here and hard for the game, as we have this day found several deer, one bear, and four buffaloes dead in the woods which seem to have perished through want." This is the latest reference to the presence of buffaloes in Ohio that we have seen.

The foregoing quotations justify beyond all doubt the inference that the buffalo was an inhabitant at least of Western Pennsylvania. It is not to be presumed that it would frequent the territory immediately west and south of Pennsylvania and not cross over the boundary lines.

That buffaloes frequented the salt springs in Northwestern Pennsylvania is shown in the following extract from a letter written by the English traveler, Thomas Ashe, at Erie, in April, 1806. He says: "An old man, one of the first settlers in this country, built his log house on the borders of a salt spring. He informed me that for the first several seasons the buffaloes paid him their visits regularly." He supposed that there were no less than 10,000 in the neighborhood of the spring. Ashe further says that in the first and second years this old man, with some companions, killed 600 or 700 of these noble creatures for the sake of their skins. He also says that buffalo bones had been found in large quantities on Buffalo creek, but he does not locate the creek. Fort Le Bœuf, (Waterford,) in Erie county, Pennsylvania, established by the French about 1754, meant Buffalo Fort.

In his valuable monograph on *The Extermination of the American Bison* William T. Hornaday says that in the

region between the Allegheny river and the west branch of the Susquehanna "there were at one time thousands of buffaloes." In support of this opinion he quotes from Professor J. A. Allen's *American Bisons* and from other monographs by the same author.

Professor Allen refers to Buffalo creek, "which empties into the eastern end of Lake Erie," and to other evidences that buffaloes "once existed in Western New York." Hornaday adds that "from the eastern end of Lake Erie the boundary of the bison's habitat extends south into Western Pennsylvania to a marsh called Buffalo swamp on a map published by Peter Kalm in 1771." He quotes Allen as saying of this swamp that it "is indicated as situated . . . near the heads of the Licking and Toby's creeks, apparently the streams now called Oil creek and Clarion creek." It was in this locality that "there were at one time thousands of buffaloes."

It is a reasonable inference that many places in Pennsylvania were not given buffalo names merely through caprice. Buffalo Mills and mountain in Bedford county, Buffalo mountain and valley in Union county, Buffalo creeks in Washington, Perry, Union, and other counties, and Buffalo townships in several counties in Central and Western Pennsylvania are *prima facie* evidence that buffaloes had once frequented the localities to which their name had been given. There is a tradition that the last buffalo in Bedford county was killed at Buffalo Mills. Rhoads says that there are sure proofs of the existence of the buffalo along the Casselman river in Somerset county. The last buffalo in Pennsylvania was probably killed in Union county about 1790, as will presently be shown.

Some of the buffalo localities referred to above are in Central Pennsylvania, east of the Alleghenies. In Professor Hornaday's map illustrating his monograph he indicates that the range of the buffalo in Pennsylvania extended as far east as Harrisburg. Neither William Penn nor any other early writer mentions the buffalo in Eastern Pennsylvania, although Gabriel Thomas in 1698 says that the buffalo was found in the province. Hulbert often mentions buffalo paths in Central and Western Pennsylvania.

Professor Allen carries far to the eastward his investigations of the presence of the buffalo in Pennsylvania and finds proofs of its existence in Union county in the Susquehanna valley. He quotes from a letter written on March 14, 1876, by Professor Loomis, of the University of Lewisburg, to Professor Hamlin, in which letter Loomis copies as follows from a letter received by him from J. Wolfe: "Since seeing you this morning I have had a conversation with Dr. Beck, and he informs me that buffaloes, at an early day, were very abundant in this valley, and that the valley received its name from that circumstance. The doctor received his information from Colonel John Kelly, who was a prominent and early settler in this valley. Kelly told the doctor that he shot the last one that was seen in the valley. Kelly received his information of the abundance of buffaloes from an old Indian named Logan, friendly to the whites, and who remained among the whites after the Indians were driven away."

On March 30, 1876, Professor Loomis wrote again to Professor Hamlin, from which letter Allen quotes as follows: "I sought an interview with Dr. Beck. The Colonel Kelly referred to was a soldier and an officer in the Revolutionary war. . . . (He died in 1832, aged 88 years.) He owned a farm about five miles from Lewisburg, in Kelly township, which was named after him. About 1790-1800 Colonel Kelly was out with his gun on the McClister farm, (which joined that of Colonel Kelly,) and just at evening saw and shot a buffalo. His dog was young and at so late an hour he did not allow it to pursue. The next morning he went to hunt his game but did not find it. Nearly a week later word was brought him that it had been found dead, some mile or two away. He found the information correct but the animal had been considerably torn and eaten by wolves. He regarded the animal as a stray one and had never heard of any in the valley at a later day. Dr. Beck had the account from Colonel Kelly about three months before his death. The colonel repeated the statement of the friendly Indian, Logan, who said that buffaloes had been very abundant. He, Dr. Beck, had the same statement from Michael

Grove, also one of the first settlers in the valley. . . I was more particular than I should ordinarily have been because this is about the last stage when reliable tradition can be had." Allen says: "This, of course, affords satisfactory proof of the former existence of the buffalo in the region of Lewisburg, which forms the most easterly point to which the buffalo has been positively traced." The valley referred to by Dr. Beck near the top of the preceding page was Buffalo valley, in Union county.

In Watson's *Annals*, published in 1857, it is stated that "the latest notice of buffaloes nearest to our region of country is mentioned in 1730, when a gentleman from the Shenandoah, Virginia, saw there a buffalo killed of 1,000 pounds, and several others came in a drove at the same time." As the Shenandoah valley is an extension of the Cumberland valley in Pennsylvania it is easily to be inferred that if buffaloes would come into one valley they would naturally invade the other. Hence it is altogether probable that the bones found by Professor Baird near Carlisle were what he supposed them to be, Carlisle being in the Cumberland valley.

The foregoing summary of facts relating to the buffalo abundantly proves its existence in Central Pennsylvania as well as in Western Pennsylvania down to a period cotemporaneous with the close of the Revolutionary war.



CHAPTER X.

EARLY TRANSPORTATION IN PENNSYLVANIA.

THE opening of means of communication between the different parts of Pennsylvania in the early days of its settlement was slow and often difficult. In the lowlands along the Delaware bridle paths followed the lines of Indian trails, while canoes, skiffs, and small boats were used on the streams and rivers. Afterwards wagon roads were cut through the forests to meet neighborhood wants, although for many years carts and sleds were more generally used on these roads than wagons. When they could not be forded streams and rivers were crossed by canoes, skiffs, and rafts, and later by ferries. A ferry over the Schuylkill at Market street, Philadelphia, was in operation in 1685. In time some of the roads were extended so that communication could be opened with the more or less remote parts of Pennsylvania and to connect with other roads leading to New York, Baltimore, and other places of importance, but there was no noteworthy movement to improve the condition of the roads for a hundred years. Ferries were established over the principal streams as the country was opened to settlement. Harris's ferry, which crossed the Susquehanna where Harrisburg now stands, and Wright's ferry, which crossed the same stream at Wrightsville, were established about 1735. One of the earliest ferries in Western Pennsylvania was Devore's ferry, on the Monongahela river, where Monongahela City now stands, which was established about 1770. The Belle Vernon ferry, on the Monongahela, was established between 1767 and 1769. Ferries at Pittsburgh date from 1779.

Bridges were not built over any of the large rivers of Pennsylvania until about the beginning of the last decade of the eighteenth century and in the next two decades, ferries having been mainly relied on previous to this period, and, of course, were continued as necessity required. The first bridge over the Schuylkill at Philadelphia, at Market

street, was commenced in 1800 and it was opened for use in 1805. The second bridge over the Schuylkill, at Callowhill street, was completed in 1812. The first bridge over the Monongahela at Pittsburgh was the Smithfield street bridge, built in 1818, and the first bridge over the Allegheny at Pittsburgh was the St. Clair street bridge, completed in 1820. Ringwalt quotes from a report on roads and bridges, which was read in the Senate of Pennsylvania in 1822, the following dates of the incorporation of some of the early bridge companies: "Bridge over the Susquehanna, four miles below Wrightsville, 1793; over the Delaware, at Easton, 1795; over the Lehigh, near Bethlehem, 1797; over the Delaware, at Trenton, 1798." A notable bridge over the Conemaugh, at Blairsville, was completed in 1821. It was a single-arch Wernwag bridge, 300 feet long.

For many years after wagon roads were opened in Eastern Pennsylvania bridle paths were in use in the central and western parts of the State, and along these paths the pioneers made their way on horseback and on foot and the necessities of life were transported on pack-horses. Rupp, writing in 1848, says that "sixty or seventy years ago five hundred pack-horses had been at one time in Carlisle, going thence to Shippensburg, Fort Loudon, and farther westward, loaded with merchandise, also salt, iron, etc." Day says that "Mercersburg, in Franklin county, was in early days an important point for trade with Indians and settlers on the western frontier. It was no uncommon event to see there 50 or 100 pack-horses in a row, taking on their loads of salt, iron, and other commodities for the Monongahela country." A pack-horse train has been described as follows: "A train of pack-horses consisted of from five to a dozen and even more, tethered by a hitching rope one behind the other. The master of the train rode before or followed after the horses and directed their movements by his voice. About fifteen miles per day were traveled in this manner, and each horse carried about 200 pounds' burden. The harness consisted of a pack-saddle and a halter, and the lead horse often had, in addition, a circling band of iron over his withers attached to the saddle and to which were hung several bells, whose

tinkling in a way relieved the monotony of the journey and kept the horses from going astray."

The pack-horse required the use of a pack-saddle. It is thus described by a writer in a Pittsburgh newspaper on early transportation in Western Pennsylvania: "It was made of four pieces of wood, two being notched, the notches fitting along the horse's back, with the front part resting upon the animal's withers. The other two were flat pieces about the length and breadth of a lap shingle, perhaps eighteen inches by five inches. They extended along the sides and were fastened to the ends of the notched pieces. Upon these saddles were placed all kinds of merchandise. Bars of iron were bent in the middle and hung across; large creels of wicker-work, containing babies, bed-clothing, and farm implements, as well as kegs of powder, caddies of spice, bags of salt, sacks of charcoal, and boxes of glass, were thus carried over the mountains. Shopkeepers from Pittsburgh went to Philadelphia in squads of eight or ten to lay in their yearly supply of goods and brought them to this city in this manner."

In 1792 the turnpike era in the history of Pennsylvania had its beginning, when the construction of the Philadelphia and Lancaster Turnpike was undertaken by a company. It was finished between the two cities in 1794, a distance of 62 miles, at a cost of \$465,000, contributed entirely by stockholders in the company, a great financial achievement for that day. This turnpike was the first to be built in the United States. It gave a great impetus to western travel through Pennsylvania, as it was almost immediately followed by other turnpikes and by the improvement of old roads—all leading to Pittsburgh. Before its construction travelers from New England, New York, and New Jersey for the West through Pennsylvania passed through Easton and Reading to the Susquehanna, which they usually crossed at Harris's ferry.

Soon after the Philadelphia and Lancaster Turnpike was built over a hundred other turnpikes were projected in Pennsylvania and many were built, the first three decades of the nineteenth century being prolific of turnpikes. Most of these enterprises were of only local interest, connecting

towns that were not far apart, usually county-seats, but others were longer and of commercial importance. The junction of two or more of these turnpikes afforded continuous turnpike communication between widely separated commercial centres. Turnpike roads connected Philadelphia with Pittsburgh by two distinct routes, which were generally known as the Northern and Southern turnpikes, although each route embraced more than one turnpike. Nearly all the turnpike companies were aided by State appropriations. The Lancaster Turnpike was not so aided.

The Conestoga wagons and Conestoga horses of the German and Swiss farmers of Eastern Pennsylvania were famous before the building of the Lancaster Turnpike and its western connections, but after this turnpike was built they became objects of interest as far west as Pittsburgh. In 1789 Dr. Benjamin Rush described the Conestoga wagon and its horses in the following words: "A large strong wagon, (the *ship* of inland commerce,) covered with a linen cloth, is an essential part of the furniture of a German farm. In this wagon, drawn by four or five horses of a peculiar breed, they convey to market, over the roughest roads, 2,000 and 3,000 pounds' weight of the produce of their farms. In the months of September and October it is no uncommon thing, on the Lancaster and Reading roads, to meet in one day fifty or one hundred of these wagons on their way to Philadelphia, most of which belong to German farmers." Many Conestoga wagons and horses came from Lancaster county, which in Dr. Rush's day embraced a large part of Lebanon county. Afterwards they greatly increased in number and formed an important factor in the internal commerce of Pennsylvania down to almost the middle of the nineteenth century, when the canals and railroads of the State rendered their further use on a large scale unnecessary. It has been authoritatively stated that as early as 1790 ten thousand Conestoga wagons were needed for the traffic of Philadelphia.

Between 1830 and 1840 the era of turnpike building culminated. The people of Pennsylvania were then looking to canals and railroads for means of communication.

In the next ten or fifteen years plank roads became popular as substitutes for turnpikes for short distances and many were built, but their popularity soon waned. Township roads without solid stone foundations are still too much in evidence in Pennsylvania, although it is now the policy of the State to aid in the improvement of these roads substantially after the style of the best turnpikes. Many of the old turnpikes are still maintained in excellent condition, as are also many of the early roads.

“Dear roads that wind around the hill,
Here to a church and there to a mill,
And wind and wind as old roads will.”

In colonial days the two most notable roads in Pennsylvania were built for military purposes—Braddock's Road, following a noted Indian path, Nemacolin's, built in 1755, and Forbes's Road, built in 1758, both crossing the Allegheny mountains and penetrating the wilderness of Western Pennsylvania. Braddock's Road began at Cumberland, Maryland, and entered Pennsylvania in Somerset county, and Forbes's Road began at Bedford, Pennsylvania. Both roads had Fort Du Quesne as their objective point, and both were built nearly the whole way to that place. After the direct objects for which they were built—the transportation of troops—had been accomplished these roads served a useful purpose in enabling thousands of pioneers to cross the Alleghenies into the western part of Pennsylvania and the Ohio valley, Forbes's Road being, however, much more used by the pioneers than Braddock's, although the latter was the main highway for emigrants from Virginia and Maryland. Forbes's Road was also used for military purposes in Colonel Bouquet's expedition against the Indian uprising under Pontiac in 1763, and during the Revolution it was the direct route from the East to Fort Pitt. Hulbert says that “for thirty years after it was built it was the main highway across the mountains.” After the Revolution, in 1785, Pennsylvania began the work of improving Forbes's Road and also the road leading from Carlisle to Bedford, and this work was carried on for several years. The distance from Carlisle

to Pittsburgh by this route was 197 miles. This road was generally known as the State Road, and for many years it was more traveled than any other road in Pennsylvania. During the second and succeeding decades of the nineteenth century turnpikes took its place.

Hulbert quotes from the correspondence in 1758 between General Forbes, Sir John St. Clair, and Colonel Bouquet sufficient testimony to settle the long disputed location of Kickenapawling's town, Kickenapawling being an Indian chief. This correspondence proves conclusively that this much discussed place was in Somerset county, on the line of Forbes's Road and not far distant from the present town of Jenner Cross Roads—about five miles west of the crossing of Quemahoning creek. The reader will find the correspondence in Hulbert's *Historic Highways*, volume 5. Post's second journal, which has been relied upon to establish the identity of Kickenapawling's town with Johnstown, shows that Post was never near Johnstown.

At a later day, immediately after the close of the Revolution, the General Assembly of Pennsylvania, by act of March 29, 1787, directed that commissioners should be appointed to survey a highway over the Allegheny mountains between the waters of the Frankstown branch of the Juniata river and the Conemaugh river. By the same act the commissioners, having surveyed the proposed road, were further directed to trace the course of another road, beginning at the termination of the first mentioned road, and leading along "the left bank of the Conemaugh" to that point "where the river began to be navigable at all seasons." Down to this time communication between the Juniata and the Conemaugh valleys had been maintained by bridle paths. The commissioners were appointed, and on December 18, 1787, their report of the survey they had made was confirmed by the Council of the Commonwealth, the Constitution of 1776 being still in force. On September 25, 1788, the opening of both roads was contracted for by Robert Galbraith, then the prothonotary of Bedford county. The contract was for the whole length of road from Frankstown, now in Blair county, to the point where the Conemaugh "began to be navigable at all seasons."

This point was seventy miles east of Pittsburgh by water. On January 4, 1790, Mr. Galbraith wrote to the Council that, agreeably to contract, he had opened the road from Frankstown to the mouth of Blacklick creek. The Blacklick enters the Conemaugh from the north, a short distance below Blairsville, in Indiana county. At its mouth there once stood a small town called Newport. A ferry connected Newport with the opposite shore of the Conemaugh in Westmoreland county. The Frankstown Road was subsequently, about 1791, extended by way of this ferry to Pittsburgh, and its name is retained in Frankstown avenue of that city. It crossed the Alleghenies through Blair's Gap in Blair county and through the central part of Cambria county near Ebensburg, thence passing near or through Armagh in Indiana county and north of Blairsville to its terminus at the mouth of Blacklick creek. This was the original Frankstown Road, and, like Braddock's and Forbes's roads, it was a thoroughfare connecting the eastern and western parts of Pennsylvania. It was succeeded early in the nineteenth century by the so-called Northern Turnpike, which was otherwise known as the Huntingdon Turnpike.

There was, however, another Frankstown Road, taking its name from the fact that its eastern terminus was also at Frankstown. This road was authorized by an act of the General Assembly dated April 10, 1792, which provided for the opening of a road from Poplar run, in the present county of Blair, "to Conemaugh at the mouth of Stony creek and from thence to the northwest side of the Chestnut ridge, at or near Thomas Trimble's." This road was made promptly, at least as far west as the mouth of the Stony creek at Johnstown, beginning at Frankstown and passing through the southern parts of Blair and Cambria counties. It is marked on Howell's map of 1792 and on Morse's map of 1796. It is still in use between Johnstown and Blair county and is known as the Frankstown Road. The most important service of this road was in the transportation of merchandise, chiefly iron from the Juniata valley, to Johnstown, at which point flatboat navigation to Pittsburgh began. There is no accessible record of

its having ever been extended from Johnstown to Thomas Trimble's, "to the northwest side of the Chestnut ridge," but it was certainly built from Johnstown westward into the Ligonier valley some time after 1799.

In the history of Salem church, in Derry township, Westmoreland county, prepared by John Barnett, one of its early elders, occurs the following account of an incident that could not have happened in our day: "It is said that during the pastorate of Rev. Mr. Lee (1813 to 1819) Esquire Kinkaid, on his way to church, saw an emigrant traveling on the old Frankstown Road. He went on to church and consulted with Squire Barnett. They concluded that such a violation of the Sabbath law ought not to be permitted, and mounting their horses they overtook the man on Donnelly's (now Beatty's) hill and made him rest according to God's commandments." Beatty's hill is several miles northeast of Greensburg. The Frankstown Road referred to was a continuation of the Blacklick line.

A road of national importance, usually styled the National Road but sometimes the Cumberland Road, was undertaken by the Government of the United States in 1806 with the patriotic object of opening a highway between the East and the West and thus aiding in more strongly cementing these two sections of our country. The road was planned to pass westward from Cumberland through Maryland, Pennsylvania, and Virginia to a point on the Ohio river, afterwards fixed at Wheeling, and thence into Ohio and eventually farther west, thus realizing the early dream of Washington, who had for many years before his death advocated a closer union of the East and the West through the creation of transportation facilities between these sections. Work on the construction of this road was commenced at Cumberland in 1811, and the road was finished to Wheeling and opened to the public in 1818, a distance of 112 miles, of which $24\frac{1}{2}$ miles were in Maryland, $75\frac{1}{2}$ were in Pennsylvania, and 12 were in Virginia, now West Virginia. It was 40 feet wide at its narrowest point and 80 feet at its widest. The road in Pennsylvania passed through Somerset, Fayette, Westmoreland, and Washington counties. After 1818 it was extended into Ohio,

Indiana, and Illinois. Until after 1850 it was a much used thoroughfare, both for passengers and freight, and it accomplished all the desirable results which had originally been claimed for it. After 1850 its use, which had gradually been yielding to the competition of the canals and railroads, and also to the competition of steamboat navigation on the Ohio, rapidly declined, except for local purposes, and for these purposes parts of it, especially in Pennsylvania, are still kept in good condition, although no longer under the care of the United States. The influence of the National Road in the development of the country west of the Alleghenies has been very great.

Joseph W. Hunter, State Highway Commissioner for Pennsylvania, says in his report for 1906 that the National Road in the counties of Fayette and Washington, which had been under the care of the State since 1835, was placed under the care of the State Highway Department by act of April 10, 1905, and the sum of \$100,000 was appropriated for its improvement. Tolls were abolished by the act, and all the toll houses, except two, had been sold and removed beyond the line of the road. Ten miles of the road, five miles in each of the counties of Fayette and Washington, were to be reconstructed at once.

In the early days the cost of transportation between the eastern and western parts of Pennsylvania by bridle paths, pioneer wagon roads, and turnpikes was a serious matter. "The good old times" were accompanied by great drawbacks and this was one of them. In Washington's diary of his trip to Western Pennsylvania in 1784 he says, speaking of Pennsylvania: "There are in that State at least 100,000 souls west of the Laurel hill who are groaning under the inconvenience of a long land transportation." In 1784 the freight rate from Philadelphia to Pittsburgh on pack-horses, then the only method of long distance transportation that was in use, was 12½ cents per pound, while in 1786 a rate of \$10.50 per hundredweight (112 pounds) was charged for the same distance. In 1784 it cost \$249 to carry a ton of merchandise from Philadelphia to Erie on pack-horses; in 1789 it cost \$3 to carry a hundred pounds of merchandise from Hagerstown, Maryland,

over the Allegheny mountains to Brownsville, Pennsylvania; and in 1793 it cost \$75 a ton to carry bars of iron from Centre county, Pennsylvania, to Pittsburgh. All the roads were uniformly bad. In 1803 the charge for hauling most articles of merchandise from Baltimore to Pittsburgh was \$4.50 per hundred pounds and from Philadelphia to Pittsburgh the charge was \$5.

It is recorded that an immigrant from Alexandria, Virginia, to the Monongahela valley soon after the Revolution paid \$5.33 a hundredweight for hauling "women and goods" between the two localities over Braddock's Road.

In 1817 it still cost \$100 to move a ton of freight from Philadelphia to Pittsburgh. The Pennsylvania Railroad Company now performs the same service for a few dollars. About 1890 an old gentleman who had been a merchant wrote to George B. Roberts, then president of the Pennsylvania Railroad Company, as follows: "Before any canal was made I shipped 800 barrels of flour one winter from Pittsburgh to Philadelphia by wagon, the freight on which was \$2,400, being \$3 per barrel. That was called back loading, (Conestoga wagons, six horses, and bells.) My first load of goods, 60 years past, cost \$4 per 100 pounds from Philadelphia to Pittsburgh. Having handled Uncle Sam's mail bags for over 61 years consecutively I have taken two bushels of oats, or four pounds of butter, or five dozen of eggs, or two bushels of potatoes, for a letter that came 400 or more miles." Those were the days when it was not required that postage should be prepaid and when the rates were high.

After communication between Philadelphia and Pittsburgh had been opened by way of roads and turnpikes, so that wagons and other vehicles could pass over them with reasonable speed, lines of stage coaches were established for the conveyance of passengers and for carrying the mails between the two cities and intermediate points. Ringwalt says: "For many years two great lines of coaches were run between Pittsburgh and Philadelphia. Starting daily, the three hundred and fifty odd miles between the two cities were passed over in about three days, that is, if the roads were in very good condition, but more

time was usually required. Every twelve miles a change of horses was made, and quickly. No time was lost and no rest was given the traveler. The fare on the coach from city to city varied somewhat, as did the condition the roads were in, or as the rival lines cut the closest on prices. A through-pass ticket from Pittsburgh to Philadelphia was all the way from \$14 to \$20, which in those days meant more than the same sum does now. There were special rates to emigrants, but they were brought west in large covered wagons, and not on the regular coaches. For twenty-five years emigrant travel formed a big portion of the business along the turnpike. It was mostly from Baltimore, thousands of emigrants landing there, and engaging passage to the West through companies engaged in that business alone." Egle says that in August, 1804, the first through line of coaches from Philadelphia to Pittsburgh was established.

Ringwalt further says : " The stage coach feature of the old turnpike is something with such a dash and liveliness about the very thought of it that it awakens our interest. It was truly the life of the turnpike. Dashing along at a gallop the four horses attached to the coach formed quite a marked contrast to the slow-plodding teams drawing the big wagons. Then there was something of more than ordinary interest about the coach itself and the passengers as well." Another writer says : " The driver invariably carried a horn with a very highly pitched tone, which he winded at the brow of the last hill to signalize his approach."

After the National Road and the turnpikes had been built in Pennsylvania a large business was done for many years, and until about the middle of the last century, in driving cattle, horses, sheep, and hogs from the interior and western parts of Pennsylvania, and even from Ohio, to Baltimore, Philadelphia, and other eastern markets. The clouds of dust raised by the drovers, the long lines of Conestoga wagons, and the less frequent but more showy stage coaches united to make the thoroughfares of that day real arteries of commerce, which should not be lightly considered in comparison with the more expeditious transportation facilities of the present day.

William H. Speicher, a resident of Stoyestown, Somerserset county, writes of the old stage houses as follows: "Stoyestown had several of them. Here passengers secured a hasty meal while a change of horses was made, and the present generation can not realize the commotion that was caused by the arrival and departure of half a dozen stages of rival lines with horns blowing, streamers flying, and horses on the full run. Sometimes as many as thirty stages stopped at one of these hotels in a single day. Most of them were drawn by four horses, but in climbing the mountains six were frequently used. For the accommodation of wagons and drovers the road houses, with large wagon yards, averaged one for every two miles along the road. These were built especially for the purpose and consisted principally of a large kitchen, dining-room, and very large bar-room, the latter also serving as a lodging room for the wagoners and drovers. Six and eight-horse teams were usually accompanied by two men, and all of them carried their own bedding, which was spread out on the bar-room floor before a huge log fire in the chimney place in the winter."

The drover was "the man on horseback" of his day. He was a person of consequence. But he has departed. And the old stage drivers and wagoners! To-day they are scarcely to be found, "most of them having thrown down the reins and put up for the night."



CHAPTER XI.

EARLY NAVIGATION IN PENNSYLVANIA.

IN the early history of Pennsylvania, as of other colonies, the streams played an important part in opening the wilderness to settlement and in promoting intercourse between the pioneers. Afterwards when canals were introduced the rivers were often slackwatered as part of a canal system. The Indians set the pioneers the example of utilizing the streams for transportation purposes, but the Indians did not build bridges or establish ferries. Long before there were roads of any kind in Pennsylvania the Indian paths were supplemented by the Indian canoe, the latter sometimes made of birch bark but more frequently hollowed out of the trunk of a pine tree. But, however made, the Indian canoe was everywhere in use in the navigation of rivers when the white people came to Pennsylvania. Ringwalt says that "the canoe was to nearly all the tribes what the horse was to the Arab." Some of the Indian canoes would carry freight weighing two and three tons. Even larger canoes were sometimes built. After the advent of the whites canoes were in frequent use by the Indians in carrying furs to a market, and by both whites and Indians in transporting the goods of the Indian traders. The settlers made free use of them.

The first settlers in time substituted skiffs for canoes, and when the streams were wide enough and deep enough and large quantities of agricultural products and other merchandise were to be moved they built rafts, flatboats, Durham boats, and keel boats. Durham boats were so called only in the eastern part of Pennsylvania, and keel boats are associated with the early history of navigation in the western part. These boats were of similar if not of identical construction. Durham boats as well as flatboats were used on the Delaware, Schuylkill, and Susquehanna rivers for many years. Keel boats were in use on the Ohio at Pittsburgh as early as 1792 and at Johnstown

as early as 1816. Under the general term of flatboats we include barges and all forms of flat-bottomed boats that were in use in pioneer times. Boats of this class were wholly used in descending streams of considerable size, including the Ohio, and at the end of their journey were sold for the lumber that was in them. Hulbert says that "the flatboat was the important craft of the era of emigration, the friend of the pioneer. The flatboat of average size was a roofed craft about 40 feet long, 12 feet wide, and 8 feet deep. It was square and flat-bottomed and was managed by six oars." Keel boats were used in both ascending and descending the rivers. They had rounded sides and slightly rounded bottoms, the hull being substantially like that of a canal boat. As they were an important feature of early transportation on the Ohio river, and in the streams tributary to the Ohio itself, further mention of their construction and operation will not be out of place. We remember seeing many keel boats on the Allegheny river about 1840.

Hulbert says: "The keel boat heralded a new era in internal development, an era of internal communication never known before in the Central West. As a craft it is almost forgotten to-day. Our oldest citizens can barely remember the last years of its reign. It was a long, narrow craft, pointed at both prow and stern. On each side were provided what were known as running boards, extending from end to end. The space between, the body of the boat, was enclosed and roofed over with boards or shingles. A keel boat would carry from twenty to forty tons of freight, well protected from the weather; it required from six to ten men, in addition to the captain, who was usually the steersman, to propel it up stream. Each man was provided with a pole to which was affixed a heavy socket. The crew, being divided equally on each side of the boat, 'set' their poles at the head of the boat; then bringing the end of the pole to the shoulder, with bodies bent, they walked slowly along the running boards to the stern, returning quickly, at the command of the captain, to the head for a new 'set.' In ascending rapids the greatest effort of the whole crew was required, so that

only one at a time could 'shift' his pole. This ascending of rapids was attended with great danger, especially if the channel was rocky."

Hulbert continues : " The narrowness of the keel boat, it will be noted, permitted it to ply far up the larger tributaries of the Ohio and a considerable way up its smaller tributaries—territory which the barge and flatboat could never reach. It is probable, therefore, that the keel boat brought much territory into touch with the world that otherwise was never reached save by the heavy freighter and the pack-saddle ; indeed it is probable that this was the greatest service of the keel boat—to reach the rich interior settlements and carry their imports and exports. . . . Take, for instance, the salt industry, which in the day of the keel boat was one of the most important industries, if not the most important, in the Central West. Salt springs and licks were found at some distance from the main artery of travel, the Ohio, and it was the keel boat, more enduring than the canoe, and of lighter weight and draught and of lesser width than the barge, which did the greater part of the salt distribution, returning usually with loads of flour. . . . The keel boat was the only craft of burden that could ascend many of our streams to the carrying-place. . . . The keel boat may be considered, therefore, the first up-stream boat of burden which plied the Ohio and its tributaries."

Mention of the salt industry suggests the great number of salt works which lined the banks of the lower Conemaugh and the Kiskiminitas rivers in the first half of the last century and for some years afterwards. There were also a few salt works on the Allegheny below the mouth of the Kiskiminitas. Before the completion of the Pennsylvania Canal from Pittsburgh to Blairsville in 1829 the salt from these works was taken in barrels to Pittsburgh in keel boats for local consumption or for shipment down the Ohio. Sometimes the keel boats themselves were taken to points near Pittsburgh and poled or floated back.

The building of all kinds of flat-bottomed boats and of keel boats was an important industry of Western Pennsylvania and elsewhere in the Ohio valley in early days.

The Navigator, of Pittsburgh, said in 1806 that "flat and keel boats may be procured at New Geneva, Brownsville, Williamsport, Elizabethtown, and McKeesport on the Monongahela, and perhaps at several places on the Youghiogheny." As early as 1788 the boatyards at most of the places above mentioned were in active operation. Pittsburgh did not build boats of any kind until about 1800.

Boats were certainly built on the Youghiogheny at Connellsville and Robbstown, now West Newton, as early as 1788. In 1793 Zachariah Connell laid out the town of Connellsville, "because it was here that emigrants and travelers to the West, of whom there were already great numbers in transit, coming over the road from Bedford by way of Turkey Foot, reached a boatable point on the Youghiogheny river. Here, for several years, boats had been built by emigrants and others to take their merchandise and other movables down by water carriage." In his charter of the town Mr. Connell stipulated that "the space left opposite the ferry and fronting on said river shall be and continue free for the use of the inhabitants of said town and for travelers who may erect thereon temporary boatyards, or may from time to time occupy the same or any part thereof for making any vessel or other conveniences for the purpose of conveying their property to or from said town." One use of "the space left opposite the ferry" was the parking in it of the wagons of emigrants while their boats were being built.

The early settlers of Western Pennsylvania who had agricultural produce or other products to dispose of were for many years badly in need of near-by markets. Grain and flour, bacon and some other products, would not bear transportation to the East; hence rye was converted into whisky, and the excise tax on whisky, a most unwise and unjust tax, led to the Whisky Insurrection of 1794. Furs could be taken to Chambersburg and Winchester in exchange for salt and iron. Ginseng, maple sugar, and beeswax were other local products that would bear transportation to eastern markets. With the increase of population west of the Alleghenies after the Revolution, including settlements on the Ohio below Pittsburgh and

Wheeling, a market for the surplus products of Western Pennsylvania was gradually opened, and use was found for keel boats and flat-bottomed boats. The Spaniards were at this time in possession of the Lower Mississippi valley, including the city of New Orleans, and as they were not generally engaged in productive industries they needed the agricultural products of Western Pennsylvania.

In Collins's *History of Kentucky* it is stated that Captain Jacob Yoder took the first flatboat down the Ohio and Mississippi rivers to New Orleans in 1782. Collins says: "The late Capt. Jos. Pierce, of Cincinnati, Ohio, had erected over the remains of his old friend Capt. Jacob Yoder an iron tablet (the first cast west of the Alleghenies) thus inscribed: 'Jacob Yoder was born at Reading, Pennsylvania, August 11, 1758, and was a soldier of the Revolutionary army in 1777 and 1778. He emigrated to the West in 1780, and in May, 1782, from Fort Redstone, on the Monongahela river, in the first flatboat that ever descended the Mississippi river, he landed in New Orleans with a cargo of produce. He died April 7, 1832, at his farm in Spencer county, Kentucky, and lies here interred beneath this tablet.'" Fort Redstone is the name that was first given to Brownsville.

Dr. Joseph Smith, in his history of *Old Redstone*, (1854,) gives us the following account of the trade with New Orleans in the early days: "New Orleans furnished a good market for all the flour, bacon, and whisky which the upper country could furnish. The trade to New Orleans, like every other enterprise of the day, was attended with great hardship and hazard. The right bank of the Ohio, for hundreds of miles, was alive with hostile Indians. The voyage was performed in flatboats and occupied from four to six months. Several neighbors united their means in building the boat and in getting up the voyage, some giving their labor and others furnishing materials. Each put on board his own produce at his own risk, and one of the owners always accompanied the boat as captain and supercargo. A boat of ordinary size required about six hands, each of whom generally received about \$60 a trip on his arrival at New Orleans. They returned either

by sea to Baltimore, when they would be within 300 miles of home, or more generally through the wilderness, a distance of 2,000 miles. A large number of these boatmen were brought together in New Orleans. Their journey home could not be made in small parties, as they carried large quantities of specie, and the road was infested by robbers. The boatmen who preferred returning through the wilderness organized and selected their officers. These companies sometimes numbered several hundred, and a great proportion of them were armed. They were provided with mules to carry the specie and provisions, and some spare ones for the sick. Those who were able purchased mules or Indian ponies for their use, but few could afford to ride."

While the trade in flatboats with New Orleans was hazardous it was important and valuable. It continued for many years after the advent of the steamboat on the Ohio in 1811. Before that year the shipments of produce from Western Pennsylvania farms to the settlements in the western part of Virginia and in Ohio, Indiana, and Kentucky, and of other merchandise, some of which had been brought over the Alleghenies on pack-horses, had steadily increased. Then, too, the current of emigration to "the West" itself created a demand for keel boats and the various forms of flat-bottomed boats. In the spring of 1788 the New England colonists who founded Marietta, Ohio, after passing laboriously over the bad roads of Pennsylvania, came to Robbstown, now West Newton, on the Youghiogheny, and built a number of boats on which they completed their journey to the mouth of the Muskingum, where the new town was to be located. On April 3, 1788, the first of these boats, the *May Flower*, arrived at Pittsburgh, and on April 7 it reached the site of the future Marietta. Other emigrants at that period took passage on boats built on the Youghiogheny, but Brownsville, on the Monongahela, was the principal point of departure for "the West," and here the most boats were built.

In a later chapter some mention will be made of the shipments to the western markets of bar iron and iron castings from the pioneer iron works of Western Penn-

Wheeling, a market for the surplus products of Western Pennsylvania was gradually opened, and use was found for keel boats and flat-bottomed boats. The Spaniards were at this time in possession of the Lower Mississippi valley, including the city of New Orleans, and as they were not generally engaged in productive industries they needed the agricultural products of Western Pennsylvania.

In Collins's *History of Kentucky* it is stated that Captain Jacob Yoder took the first flatboat down the Ohio and Mississippi rivers to New Orleans in 1782. Collins says: "The late Capt. Jos. Pierce, of Cincinnati, Ohio, had erected over the remains of his old friend Capt. Jacob Yoder an iron tablet (the first cast west of the Alleghenies) thus inscribed: 'Jacob Yoder was born at Reading, Pennsylvania, August 11, 1758, and was a soldier of the Revolutionary army in 1777 and 1778. He emigrated to the West in 1780, and in May, 1782, from Fort Redstone, on the Monongahela river, in the first flatboat that ever descended the Mississippi river, he landed in New Orleans with a cargo of produce. He died April 7, 1832, at his farm in Spencer county, Kentucky, and lies here interred beneath this tablet.'" Fort Redstone is the name that was first given to Brownsville.

Dr. Joseph Smith, in his history of *Old Redstone*, (1854,) gives us the following account of the trade with New Orleans in the early days: "New Orleans furnished a good market for all the flour, bacon, and whisky which the upper country could furnish. The trade to New Orleans, like every other enterprise of the day, was attended with great hardship and hazard. The right bank of the Ohio, for hundreds of miles, was alive with hostile Indians. The voyage was performed in flatboats and occupied from four to six months. Several neighbors united their means in building the boat and in getting up the voyage, some giving their labor and others furnishing materials. Each put on board his own produce at his own risk, and one of the owners always accompanied the boat as captain and supercargo. A boat of ordinary size required about six hands, each of whom generally received about \$60 a trip on his arrival at New Orleans. They returned either

by sea to Baltimore, when they would be within 300 miles of home, or more generally through the wilderness, a distance of 2,000 miles. A large number of these boatmen were brought together in New Orleans. Their journey home could not be made in small parties, as they carried large quantities of specie, and the road was infested by robbers. The boatmen who preferred returning through the wilderness organized and selected their officers. These companies sometimes numbered several hundred, and a great proportion of them were armed. They were provided with mules to carry the specie and provisions, and some spare ones for the sick. Those who were able purchased mules or Indian ponies for their use, but few could afford to ride."

While the trade in flatboats with New Orleans was hazardous it was important and valuable. It continued for many years after the advent of the steamboat on the Ohio in 1811. Before that year the shipments of produce from Western Pennsylvania farms to the settlements in the western part of Virginia and in Ohio, Indiana, and Kentucky, and of other merchandise, some of which had been brought over the Alleghenies on pack-horses, had steadily increased. Then, too, the current of emigration to "the West" itself created a demand for keel boats and the various forms of flat-bottomed boats. In the spring of 1788 the New England colonists who founded Marietta, Ohio, after passing laboriously over the bad roads of Pennsylvania, came to Robbstown, now West Newton, on the Youghiogeny, and built a number of boats on which they completed their journey to the mouth of the Muskingum, where the new town was to be located. On April 3, 1788, the first of these boats, the *May Flower*, arrived at Pittsburgh, and on April 7 it reached the site of the future Marietta. Other emigrants at that period took passage on boats built on the Youghiogeny, but Brownsville, on the Monongahela, was the principal point of departure for "the West," and here the most boats were built.

In a later chapter some mention will be made of the shipments to the western markets of bar iron and iron castings from the pioneer iron works of Western Penn-

sylvania. All the trade in these articles was carried on in keel boats and flatboats. This trade began before the end of the eighteenth century. Early in the next century there developed a market for Pittsburgh coal in the towns down the Ohio, and here again was created a demand for flatboats which increased from year to year. Boats with flat bottoms are in use to-day for carrying coal down the Ohio. *Harris's Directory of Pittsburgh* for 1837 says that "the first shipment of coal from Pittsburgh appears to have been made in 1803 by a French company of merchants under the firm name of John Tarascon Bros. and James Burthoud, who during that year built the ship *Louisiana*, of 350 tons' burden, and 'sent her out ballasted with stone coal, which was sold at Philadelphia for 37½ cents per bushel.'" The first shipment of coal from the Upper Monongahela valley down the Ohio appears to have taken place about 1817. It was made in flatboats.

The presence of bituminous coal in the hills surrounding Pittsburgh and at other points in Western Pennsylvania was known to the pioneers. Perhaps the earliest mention of its existence was by Colonel James Burd, a British officer on duty in what is now Fayette county. On September 22, 1759, he wrote in his journal: "The camp moved two miles to Coal run. This run is entirely paved in the bottom with fine stone coal, and the hill on the south of it is a rock of the finest coal I ever saw. I burned about a bushel of it on my fire." The Coal run referred to was apparently about two miles distant from the present town of Brownsville. On October 4, 1770, Washington, while in Fayette county on his way to that part of Virginia which fronts on the Ohio, wrote in his journal: "At Captain Crawford's all day. We went to see a coal mine not far from his house, on the banks of the river. The coal seemed to be of the very best kind, burning freely, and abundance of it." The place named as "Captain Crawford's" occupied the site of the present town of New Haven, opposite Connellsville, and was then known as Stewart's Crossing. Coal had been discovered at Pittsburgh probably about 1758, when Fort Du Quesne fell into the hands of General Forbes. J. S. Wall, of Mo-

nongahela City, in the introduction to his report on the coal mines of the Monongahela region for the Second Geological Survey of Pennsylvania, submitted in 1884, says: "It appears that coal was mined from Coal hill and used by the British army at Fort Pitt while that place was in command of Colonel Bouquet soon after its evacuation by the French." In 1766 the Rev. Charles Beatty, who visited the fort in that year, wrote that the garrison was then "supplied with coals" from Coal hill.

In time it became necessary to improve with locks and dams the navigation of the Monongahela river as a thoroughfare for passengers seeking a connection with the National Road at Brownsville or destined for points between Pittsburgh and Brownsville, but more particularly to facilitate the shipment of coal from the Monongahela valley. This improvement was undertaken by the Monongahela Navigation Company, which obtained a charter from the Legislature of Pennsylvania on March 31, 1836, Congress having refused to improve the navigation of the river. The charter authorized the company to establish slackwater navigation from Pittsburgh to the Virginia line and farther if Virginia would give permission. The company was organized on February 10, 1837, and work was commenced in that year. In 1838 the State subscribed \$25,000 to the stock of the company and in 1840 it subscribed \$100,000 additional. In 1843 all this stock was sold to the company. On November 13, 1844, the Monongahela river was successfully slackwatered from Pittsburgh to Brownsville, a distance of $55\frac{1}{2}$ miles. The slackwater was subsequently continued to New Geneva, about 85 miles from Pittsburgh, and afterwards to Morgantown, in West Virginia, 102 miles from Pittsburgh. In 1897 the Monongahela Navigation Company disposed of all its interest in the locks and dams to the United States Government, which has since made their use free to the public. Through Senator Quay's influence the act of Congress which provided for this change became a law over President Cleveland's veto on June 3, 1896.

The improvement of the Monongahela river above referred to at once gave a great impetus to the coal trade

of the Monongahela valley, and this trade has increased from year to year. Packets for the conveyance of passengers still run regularly from Pittsburgh to Morgantown.

The improvement of the Youghiogheny river from its junction with the Monongahela at McKeesport to West Newton, a distance of $18\frac{1}{2}$ miles, embracing two locks and two dams, was completed by the Youghiogheny Slackwater Company in 1851, and this improvement contributed to the opening of many coal mines in the Youghiogheny valley. But the enterprise itself was not a permanent success. In 1861 the dams were washed out by high water and ice and in 1866 they were again destroyed, soon after which disaster the enterprise was abandoned. While this slackwater improvement was in operation packet boats regularly carried passengers from West Newton to Pittsburgh, occupying about twelve hours in making the daily trip either way. The boats were equipped with sleeping berths, and trips were made at night as well as in daylight. In the early part of the last century, until about 1820, an immense amount of freight was shipped in keel boats from West Newton.

Leaving the Monongahela and Youghiogheny valleys, which supply much the larger part of what is commercially known as Pittsburgh coal, while the Youghiogheny valley supplies most of the celebrated Connellsville coke, the Allegheny valley invites our attention. The coal of this valley has never been an important factor in the coal trade of Western Pennsylvania, unless recent developments in some western counties whose waters drain into the Allegheny may be so considered. The Allegheny was never notably a coal-carrying river. In all the valleys mentioned the railroads have now absorbed a large part of their coal tonnage, while almost all the Connellsville coke tonnage passes over them. The Allegheny valley has, however, been a large contributor to the prosperity of Western Pennsylvania through its large production of pig iron, which sought a market at Pittsburgh in the first half of the last century, and through its still larger production of lumber, much of which has found a market at points west of Pittsburgh on the Ohio river. Shipments

of pig iron were made in French creek boats or on rafts. Shipments of lumber were made chiefly in rafts. From 1859 until 1870 the Allegheny river was also an important channel for the transportation of petroleum from the newly developed fields of Northwestern Pennsylvania, and much of this traffic fell to the steamboats. About 1865 the railroads also began to carry petroleum. In the early days keel boats carried both freight and passengers to and from the settlements on the Allegheny river and its tributaries. Small steamboats shared in this trade soon after the beginning of the steamboat era and until after the beginning of the railroad era.

Until in very recent years no attempt had been made to improve the navigation of the Allegheny river. The United States Government has now undertaken the important work of improving by dams and locks the navigation of both the Ohio and the Allegheny rivers, which we need not describe in detail, but from which improvements it is expected that the transportation of coal, lumber, agricultural products, and other freight on the Allegheny will greatly increase.

The business of boatbuilding at Pittsburgh grew rapidly after 1800. In addition to keel boats and flatboats Pittsburgh built many vessels for ocean service. Chapman says: "The number of barges, flatboats, and similar craft runs far up into the thousands. In the year 1801 Tarascon Brothers & Co. built the *Amity*, a schooner of 150 tons, which was sent with a cargo of flour to St. Thomas, in the West Indies. In the same year they built the schooner *Pittsburgh*, of 250 tons, which was dispatched with a similar cargo to Philadelphia, and thence to Bordeaux, in France. These first ventures in sea-going vessels were speedily followed by others. One of these, the brig *Ann Jane*, built in 1803, was one of the fastest sailing vessels of the day, and was run for some time as a packet between New York and New Orleans." Another of the sea-going vessels that was built at Pittsburgh was the ship *Louisiana*, which is elsewhere referred to in this chapter. The building of steamboats at Pittsburgh had its beginning in 1811.

CHAPTER XII.

EARLY STEAMBOATS IN PENNSYLVANIA.

THE era of steamboat navigation in this country dates from August 17, 1807, one hundred years ago, when Fulton's steamboat, the *Clermont*, made its successful trial trip on the Hudson river. But Fulton was not the inventor of the steamboat; he simply perfected, with the assistance of Chancellor Robert R. Livingston, the mechanical ideas of others. John Fitch is worthy of being especially remembered for his unrewarded labors in applying steam power to the navigation of vessels before Fulton attempted the solution of the same problem. The success of the *Clermont* soon made steam navigation possible on all the principal rivers of this country.

Robert Fulton was born in Lancaster county, Pennsylvania, in 1765 and died in New York City in 1815. John Fitch was a native of Connecticut, born in 1743 and dying in Kentucky in 1798. Both men died young.

The introduction of steamboats on the Ohio river and its tributaries followed the general use of keel boats and the various forms of flat-bottomed boats. The first steamboat to trouble the waters of the Ohio, or of any western river, was the *New Orleans*, which was built and launched at Pittsburgh in 1811. Chapman says that "it was built on the right bank of the Monongahela, a short distance below the mouth of Sook's run. Anthony Beelen's foundry was near. The freight warehouse of the Baltimore and Ohio Railroad now occupies the spot." Its cost was about \$38,000. The *New Orleans* was mechanically and financially a success. The story of its career has often been told. At once other steamboats were built to ply on the Ohio and the Mississippi and their tributaries, and Pittsburgh became a great centre of steamboat building as well as of steamboat navigation.

In Hulbert's great work, *The Ohio River*, (1906,) we find the following account of the way in which the first

steamboat on the Ohio river came to be built: "The steamer *Clermont* sailed on the Hudson river, to the wonder of all eyes, in 1807. Fulton was quick to take complete advantage of his triumph and immediately began to secure monopoly rights and supply other rivers with his boats. The Ohio, with its tremendous possibilities commercially, early attracted his attention. In December, 1810, the Ohio Steamboat Navigation Company was incorporated by Daniel D. Tompkins, Robert R. Livingston, DeWitt Clinton, Robert Fulton, and Nicholas J. Roosevelt. The company was to operate steamers on the western waters under the Fulton-Livingston patents. The last named incorporator, Nicholas J. Roosevelt, a brother of President Theodore Roosevelt's grandfather, seems to have been the chief promoter of the Ohio branch of Fulton's great business. The boat had a keel 138 feet long and its total burden was 300 tons: it was launched in March, 1811, and in the following October set sail for the South amid the applause of infant Pittsburgh."

Steamboats of light draft were in use on the Allegheny and Monongahela rivers soon after their introduction on the Ohio, making irregular trips in carrying both freight and passengers whenever the depth of water would permit, but not supplanting either the keel boat or the flatboat. The steamboat, indeed, by facilitating the shipment of coal down the Ohio, through the introduction and general use of steam towboats, really increased the demand for flatboats, barges, and broadhorns, as coal-carrying vessels have been variously called. The first steamboat that was built in the Monongahela valley is said to have been the *Enterprise*, built at Bridgeport in 1814. Morrison says that the *Enterprise* was "a stern-wheel boat of 80 feet in length and 29 feet beam." He gives a full history of this vessel. The *Enterprise* was the first steamboat which made the round trip from Pittsburgh to New Orleans. This was in 1814 and 1815. Chapman says that "on December 1, 1814, the *Enterprise* left Pittsburgh for New Orleans with a cargo of cannon and guns for Jackson's army."

On February 28, 1828, the steamboat *Wm. Duncan*, of

eighty tons' capacity, ascended the Allegheny river to Franklin. In March, 1830, a small steamboat called the *Allegheny* was launched at Pittsburgh and on April 18 she arrived at Franklin and proceeded up the river to Warren. This vessel made seven trips up the Allegheny river in that year, at one time ascending as far as Olean, in New York. The *Allegheny* was equipped with two stern wheels. Most of the early steamboats were "side-wheelers."

Chapman writes of steamboat building at Pittsburgh in the following words: "Pittsburgh has lost some of the industries for which it was once famous. The first of these is steamboat building. This was a business once largely carried on here. The *New Orleans* was followed by the *Comet*, built in 1812-13, and the *Vesuvius* and the *Aetna*, built in 1813-14. The number of vessels built increased with wonderful rapidity from year to year until the record year 1857, in which 141 were built. In other years both before and after this date the vessels built fell little short of this maximum. The total number was more than 3,000. After the year 1865 the number built each year fell off rapidly, although many were still built until the year 1888, in which but two were built. In later years only an occasional steamboat has been built here. The prime cause of the decline of steamboat building and steamboat navigation is found in the lines of railroad that now lie along the banks of every navigable river in the country."

The first iron steamboat to be built in the United States was the little steamer *Codorus*, designed by Captain John Elgar, of York, Pennsylvania, a machinist and inventor, acting for a York and Baltimore company. It was built in 1825 at the machine shops of Webb, Davis & Gardner, of York, the same firm which, in 1832, built *The York*, the first locomotive in the country to successfully use anthracite coal. The *Codorus* received its name from Codorus creek, on which York is built. A cotemporary description of the *Codorus* mentions the following details: "A boat of sheet iron, intended for a passage-boat from Columbia, on the Susquehanna, to Northumberland, is constructing at York, in this State. The following is an account of the boat and of the steam-engine by which it

is to be propelled: The boat has 60 feet keel, 9 feet beam, and is 3 feet high; she is composed entirely of sheet iron, riveted with iron rivets, and the ribs, which are one foot apart, are strips of sheet iron, which, by their peculiar form, are supposed to possess thrice the strength of the same weight of iron in the square or flat form. The whole weight of iron in the boat, when she shall be finished, will be 3,400 lbs.; that of the wood work, decks, cabin, &c., will be 2,600 lbs.; being together three tons. The steam-engine, the boiler included, will weigh two tons; making the whole weight of the boat and engine but five tons. She will draw, when launched, but five inches, and every additional ton which may be put on board of her will sink her one inch in the water. The engine is nearly completed. The whole cost of the boat and engine will be 3,000 dollars." It has been erroneously stated that this vessel was built in England and put together at York.

In George R. Prowell's *History of York County* it is stated that the *Codorus* was launched in November, 1825, and at once steamed up to Harrisburg with a party of one hundred persons on board, with Captain John Elgar as commander. Subsequently it made a number of trips between York Haven and Harrisburg, and at least one trip to Bloomsburg, Wilkesbarre, and as far north as the New York State line. It was a great success. Two other steamboats were built at York by the same company for use on the Susquehanna—the *Susquehanna*, whose boiler exploded, and the *Pioneer*, which was "too heavy."

Morrison says of the *Codorus*: "There is no record left whether this vessel was fitted with side wheels or a stern wheel. They used wood as fuel in the boiler." The same high authority gives us the later history of this vessel as follows: "The boat remained on the Susquehanna river about two years without any permanent employment; it was then taken to Baltimore, Maryland, and the last record left of the vessel appears that in January, 1829, she was sent to North Carolina to run between Newberne and Beaufort. A Baltimore paper in April, 1830, published under the heading of 'The First Iron Steamboat:' 'We have two or three times during the past year endeavored

to set history right in regard to the place at which the first iron steamboat was built in America. The steamboat *Codorus* was the first iron steamboat built in the United States, as has been repeatedly stated in this and other papers. . . . It was built at York, the hull altogether of iron. . . . The *Codorus* was afterwards brought to this city, where after remaining some time was taken farther south to ply on some small river.' The iron was of domestic manufacture."

From Morrison we glean the following details. In 1834 we hear of a steamboat on the Savannah river, Georgia, that had been constructed in England with an iron hull and put together at Savannah in that year. This vessel was in every way a success. It was called the *John Randolph*. It was soon followed by several other iron-hull vessels that were built in England and put together in this country for use on southern rivers. In 1835 an iron-hull vessel was built at Poughkeepsie, New York, intended to be used on the Erie Canal, but this vessel was not a success because of defects in its construction. Its trial trip was made on the canal in October, 1835. Morrison continues: "There were also built in 1836, in the western part of New York, three or four iron-hull canal boats, or barges, as an opposition line of packet boats on the Erie Canal between Rochester and Buffalo. In the next year several iron canal boats were built for transportation companies for freighting on the Pennsylvania State canals, across the Allegheny mountains to Pittsburgh, connecting the Delaware and Ohio rivers. Some of these vessels were made in several distinct sections, so that when they arrived at the junction of the railroad and canal they could be readily hoisted with their merchandise to a freight car, transported across the mountains, and again placed in the canal." This is an imperfect description of the boats.

These last circumstantial statements by Mr. Morrison explain the reference in a subsequent chapter of this volume to the "Reliance Transportation Company's Line of Portable Iron Boats" which were in use on the Pennsylvania Canal in 1839. J. King McLanahan tells us that these boats were built at Coalport, on the Kiskiminitas,

by Samuel M. Kier. The hulls were covered with sheet iron over an eighth of an inch thick, which was doubtless made at Pittsburgh. The hatches were also made of iron.

Morrison further says : "As to iron hull steamboats on the western rivers the first built in the United States was named *United States*, constructed by the West Point Foundry, at New York, in 1838, for service on Lake Pontchartrain and canal at New Orleans, Louisiana. This was a double-hull boat, 110 by 26 by 3.6 feet, with a paddle wheel in the space between the hulls. The first *single iron hull* built in the United States was the *Valley Forge*, built by Robinson & Minis, steam engine builders, at Pittsburgh, and completed in December, 1839." The same author says that the Zulia River Navigation Company, of New York, contracted with the James Rees & Sons Company, of Pittsburgh, in June, 1880, for a steel-hull stern-wheel steamboat named *Venezuela*, to open navigation on the Zulia river in Venezuela. The hull was 120 by 24 by 3 feet deep. Mr. Morrison says that "this was the first steam vessel built in the United States to have steel angles and floors." He further says that "this vessel may be said to be the first *all-steel* vessel built in this country."

From another source we learn the following details of the *Valley Forge* : When this vessel was built it was said that she was the first iron vessel "of any considerable size" that had been built in this country. Her dimensions were as follows : length on deck, 160 feet ; length of keel, 140 feet ; breadth of beam, 25 feet 4 inches ; depth of hold, 6 feet.

It was not until after the close of our civil war that the building of iron vessels, either for ocean voyage or for inland navigation, became an important industry in this country. In the fiscal year 1868, the first for which there is any official record of iron shipbuilding in the United States, the whole tonnage of iron vessels built was only 2,801 tons. In the calendar year 1907 there were launched in this country 157 iron and steel vessels, whose total tonnage amounted to 436,183 tons. Of the 157 iron and steel vessels built in that year 65 were built at ports on the great lakes, their tonnage amounting to 286,266 tons.

CHAPTER XIII.

EARLY CANALS IN PENNSYLVANIA.

WE now come to the building of canals in Pennsylvania, including the improvement of natural waterways. Canals were known to the ancients. Historians mention the existence in remote ages of canals for transportation and for irrigation. They are not mentioned in either the Old or the New Testament, but there is abundant proof that they were in existence in Old Testament days. Both Egypt and Assyria possessed irrigation canals centuries before the Christian era. Canals for transportation purposes were built by the Romans in the zenith of their power. They built canals in France and in England. China built its great canal, about a thousand miles long, but which is mainly an improvement of natural waterways, in the early centuries of the Christian era, and there were other canals in China before that period. Venice has been famous for its canals since the fifth century. From the twelfth to the fifteenth century many canals were built in the Netherlands. A canal in England, uniting the Trent and the Witham rivers, was built in the twelfth century. There are many canals to-day in England and on the Continent, the most notable of which is a canal in Russia, 1,434 miles long, connecting St. Petersburg with the Caspian Sea, which was commenced by Peter the Great in 1700. This canal is, however, largely an improvement of river navigation. France particularly is intersected with canals leading in every direction; Germany also has many important canals. On the Continent the tendency is now strongly toward the extension of canals for general transportation purposes. The Aztecs built canals in Mexico.

The subject of canal transportation and the improvement of river navigation received considerable attention in the colonies before the Revolution, but with a single exception there is no authentic record of the construction of a canal in this country until after the treaty of

peace. Ringwalt says that "the first canal constructed within the present limits of the United States was, according to some accounts, a short line built by Lieutenant-Governor Colder, in Orange county, New York, in 1750, for transporting stone." The first definite action concerning a survey for a canal for general transportation purposes in any of the colonies of which we can find any mention was taken in Pennsylvania several years before the Revolution. In 1762 a "remonstrance" from sundry merchants of Philadelphia was presented to the General Assembly, praying that "proper persons" might be appointed "to view and inspect a water passage up the west branch of the River Susquehanna, as from thence, it is thought, the portage is but short to a navigable branch of the River Ohio," so that, in the words of the "remonstrance," "the Indian commerce of the province, a most important branch of the trade thereof," might "be greatly increased." No action was taken by the Assembly to promote the wishes of the Philadelphia merchants, the petition being laid aside for further consideration. In 1769 a petition was presented to the Assembly praying that the Juniata river might be made navigable, so that "a tract of country, near eighty miles in extent, would have cheap and easy communication opened into the Susquehanna, and by this means be connected with Philadelphia." This petition also produced no immediate results. In neither of these petitions was a canal mentioned, but it would have been essential to the realization of either of the schemes proposed.

On April 21, 1769, the American Philosophical Society published an appeal "to the merchants and others of Philadelphia," saying that the society "have had sundry proposals before them for opening a canal between the navigable waters of the Delaware and Chesapeake bays," and recommending that a "necessary survey" of a route for the proposed canal be made, to which appeal a committee of the merchants replied that "the design was highly approved, and a subscription was immediately begun, which already amounted to £140." This route was not surveyed until 1791. The canal was not commenced

until 1804 and it was not completed until 1829. In 1613 Captain Samuel Argall wrote to England that he hoped to make a cut between Chesapeake bay and the Delaware.

On August 16, 1771, a report of the Philosophical Society said: "Whereas, this Society, desirous to promote the inland navigation of this province, at a considerable expense made several surveys, being informed that there is a probability of joining the navigation of the Susquehanna and the Schuylkill *by a canal* between the Quittapahilla branch of the Swatara and the Tulpehocken, and as the Assembly were pleased to appoint a committee for examining the place aforesaid, among others, the Society do therefore appoint Mr. Lukens, the Surveyor General, to attend the said committee and give all the assistance in his power. His expenses will be defrayed by several public-spirited persons." This canal was subsequently built, as will presently appear. It was called the Union Canal.

The author of *An Historical Account of the Rise, Progress, and Present State of the Canal Navigation in Pennsylvania*, published in 1795, referring to events occurring in 1793, clearly indicates in the following extract that about 1769 a survey of a canal route to unite the Schuylkill and Susquehanna rivers had been made. "The summit level of middle ground between the headwaters of Quittapahilla, near Lebanon, and those of Tulpehocken, near Myerstown, (a distance of four miles and a half,) had been examined and leveled about twenty-five years ago by a committee appointed by the American Philosophical Society, viz: William Smith, D.D., then Provost of the College of Philadelphia, John Lukens, Esquire, Surveyor General of the Province (now State) of Pennsylvania, and John Sellers. The same ground was afterwards examined and leveled under legislative sanction by sundry skillful persons, and among others by the celebrated philosopher and mechanic, David Rittenhouse, Esquire, L.L.D., and his brother Benjamin Rittenhouse, Timothy Matlack, John Adlum, Esquires, and others, all agreeing in the results of their work respecting the proper tract of the canal for a junction of the Schuylkill and Susquehanna;—extending their prospects still further to the great plan now

in operation, viz: the junction of the tidewaters of the Delaware with the Ohio and western lakes."

These circumstantial statements indicate that the first survey referred to for a canal to unite the Schuylkill and Susquehanna rivers was made about 1769, under the auspices of the American Philosophical Society, and that subsequently another survey was made "under legislative sanction" by David Rittenhouse and others. The date of the last survey is uncertain. We can not find any proof of the correctness of a statement that has been frequently made that David Rittenhouse and Dr. William Smith surveyed a route for a canal between the Schuylkill and Susquehanna rivers as early as 1762.

Henry S. Tanner, in his *Description of the Canals and Railroads of the United States*, (1840,) says that "application was made to the Provincial Legislature for authority to open a water communication between the Schuylkill and the Susquehanna rivers, and in the year 1762 a survey with a view to this object was effected, by which its practicability was satisfactorily demonstrated." Tanner gives no further particulars of the alleged "survey," but other writers, without submitting any proof, say that it was made by David Rittenhouse and Dr. William Smith in 1762. We think that this early date is an error.

In the "Proposals for a Second Settlement" on the Susquehanna river, issued by William Penn in 1690, and from which we have already quoted, Penn says that a "way" *by land* had been "laid out" between the Delaware and the Susquehanna rivers "at least three years ago," and that communication between this proposed settlement and the settlements already made on the Delaware would "not be hard to do *by water* by the benefit of the river Scoalkill, for a branch of that river lies near a branch that runs into the Susquehanna river and is the common course of the Indians with their skins and furs into our parts." In these words Penn certainly indicates French creek and Conestoga creek as the branches which could be utilized in uniting the Susquehanna and Schuylkill rivers. His "way" was undoubtedly a road from the mouth of French creek to a point near the mouth of the

Conestoga. H. Frank Eshleman, of Lancaster, has made this matter clear. To Penn belongs the credit of first suggesting, as early as 1690, the project of continuous water transportation from the Delaware to the Susquehanna, but he did not specifically suggest the building of a canal.

In 1772 Benjamin Franklin, who was then representing the colonies at the British Court, wrote a long letter to Samuel Rhoads, afterwards the Mayor of Philadelphia, which Ringwalt prints in full, recommending the building of canals in our country and giving the experience of England in canal construction. He said: "Rivers are ungovernable things, especially in hilly countries. Canals are quiet and very manageable."

Without quoting further from old records the foregoing summary shows how greatly interested before the Revolutionary period were the people of Pennsylvania in the improvement of its waterways and in the building of canals. Nothing of a practical character was, however, accomplished before the Revolution, owing mainly to the financial difficulties that were encountered.

It has been claimed that the first canal that was undertaken and completed in the United States was built to overcome obstructions to the navigation of the Connecticut river at South Hadley Falls and at Turner's Falls at Montague, in Western Massachusetts. It was projected in 1792 by a company, commenced in 1793, and finished about 1796. This canal was about five miles long. It is also claimed that the next canal to be completed was built by a company between 1792 and 1797 around the rapids of the Mohawk river in New York, to improve its navigation, as in the case of the pioneer canal in Massachusetts. This canal was six miles long. These short canals were of only local importance.

The above claims of priority in canal building must be read in connection with other canal enterprises which are mentioned in detail by Ringwalt, and which, omitting the reference already made to the early canal in Orange county, New York, we condense as follows: "Probably the first charter under which active operations were prosecuted was granted by an act incorporating the James

River Company, which was passed by the Legislature of Virginia on January 5, 1785, for the purpose of improving the navigation of the James river. The company constructed a canal around the Falls of James river, extending from the city of Richmond to Westham, a distance of about seven miles, and improved the bed of the river by sluices as high up as Buchanan. Other canals include the following: A charter was granted on June 25, 1792, to 'The Proprietors of the Locks and Canals on the Merrimac River' in Massachusetts, and this company opened a line in 1797, about one and one-half miles long, which provided a channel around Pawtucket Falls, leading into the Concord river, and thence into the Merrimac river at Chelmsford. The Middlesex Canal Company was chartered in 1792. Active operations on this work were commenced in 1795. The Carondelet Canal was built in Louisiana about 1794, partly as a drainage canal for the city of New Orleans. It was constructed by Governor Carondelet, and the citizens contributed a large force of slaves to aid him. A canal was built in South Carolina in 1802 which connected Charleston harbor with the Santee river. It was twenty-two miles long and cost \$720,000."

We now come to the canals which were actually built in Pennsylvania after the storm and stress of the Revolution had come to an end. The earliest mention we have found of a completed canal in Pennsylvania relates to the Conewago Canal, in York county, which was authorized by the Legislature on April 10, 1793, to be constructed by the Conewago Canal Company. This canal was completed in 1797. It was only one and a fourth miles long and was built to overcome an obstruction in the Susquehanna river caused by the Conewago Falls.

One of the first improvements in river transportation to be undertaken in Pennsylvania was the slackwater improvement of the Conestoga Lock and Dam Navigation Company, which company was chartered by the Legislature on March 17, 1806, to improve the navigation of Conestoga creek between Lancaster and Safe Harbor, on the Susquehanna, a distance of eighteen miles. This improvement was completed by another company several years

afterwards, but it is worthy of mention as one of the first canal enterprises that was undertaken in Pennsylvania.

The first State to undertake any comprehensive canal project was undoubtedly Pennsylvania. Before the Massachusetts and New York enterprises were undertaken the Legislature of Pennsylvania chartered the Schuylkill and Susquehanna Navigation Company to connect the waters of the Schuylkill and Susquehanna rivers by canal and slackwater navigation, the exact date of the act being September 29, 1791. On April 10, 1792, the Legislature also incorporated the Delaware and Schuylkill Navigation Company to build a canal from Norristown to Philadelphia. It was proposed to have the first named company build a canal from Middletown, at the mouth of the Swatara river, where it empties into the Susquehanna river, to Reading, in Berks county, and thence by canal and slackwater to Norristown, where it would unite with the canal of the second named company, thus giving continuous water communication between Philadelphia and the interior of the State. Robert Morris was the president of both these companies. Gordon, in his *Gazetteer*, published in 1832, gives the further history of these enterprises as follows: "About fifteen miles of the most difficult parts of the two works, comprising much rock excavation, heavy embankments, extensive deep cuttings, and several locks of bricks, were nearly completed when, after an expenditure of \$440,000, the works were suspended by reason of the pecuniary embarrassments of the stockholders of the companies. The suspension of these works, and subsequently of the Chesapeake and Delaware Canal, discouraged every similar work which was projected for many years afterwards." Gordon continues: "In the year 1811 the two companies, composed chiefly of the same stockholders, were united under the title of the Union Canal Company. A large part of new stock was indispensable to the success of the company, which they were authorized to create by act of 29th March, 1819, and for payment of interest thereon the avails of a lottery granted by the last preceding act were pledged. By act of 26th March, 1821, the Commonwealth guaranteed the interest and also

granted to the company a monopoly of lotteries. Thus sustained the managers resumed their operations in 1821. The line of the canal was relocated, the dimensions changed, and it was rendered navigable in 1827."

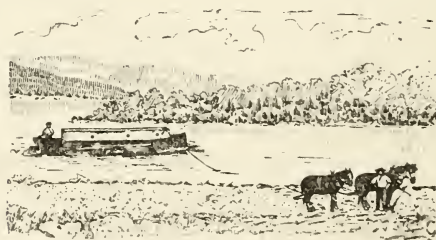
As completed the Union Canal extended only from Middletown, on the Susquehanna, to a point on the Schuylkill a short distance below Reading, a distance of nearly 90 miles, including about ten miles of branches.

At Reading the Union Canal connected with the works of the Schuylkill Navigation Company, which was chartered on March 8, 1815, to build a canal from Philadelphia to Pottsville, in Schuylkill county, utilizing wherever possible slackwater navigation on the Schuylkill river. This canal, which is still in use from Philadelphia to Port Clinton, in Schuylkill county, about fifteen miles below Pottsville, was completed and opened for business between Philadelphia and Mount Carbon, a suburb of Pottsville, in 1825. In 1828 the canal was extended from Pottsville to Port Carbon, a distance of about two miles. As finally completed there were 58 miles of canal and 50 miles of slackwater, making a total length of 108 miles. This enterprise was undertaken because of the failure of previous attempts to improve the navigation of the Schuylkill river, as described above. The whole line of the canal was leased to the Philadelphia and Reading Railroad Company in 1870. Since that year its coal and other trade has been almost entirely transferred to this company. In 1826 and 1827 the packet boat *Planet* made regular trips between Philadelphia and Reading, the fare being \$2.50.

During the first two decades of the nineteenth century many canal enterprises were undertaken in many States, including others in Pennsylvania additional to those above mentioned. The most important of these enterprises was the celebrated Erie Canal in New York, to connect Lake Erie with the Atlantic Ocean by way of Albany and the Hudson river, the canal terminating at Albany. The first ground was broken for this work at Rome, on July 4, 1817, and the canal was formally opened from Buffalo to Albany, a distance of 352 miles, on November 4, 1825. The inception and subsequent completion of this really

great work gave a great impetus to canal building in other States, especially in Maryland, Virginia, New Jersey, Pennsylvania, Ohio, Indiana, and Illinois.

In addition to the reasons which called for the establishment of closer commercial connections between the different parts of Pennsylvania its citizens could not afford to yield to New York the trade of the Great West through its Erie Canal without making an effort to secure a part of this trade. Leading citizens had long urged the necessity of more convenient means of communication between the Delaware and the western parts of the State than were afforded by roads and turnpikes. The project of uniting the Delaware with Lake Erie by a system of canals and river navigation was considered by the General Assembly as early as 1769, and was embodied in 1811 in the charter of the Union Canal Company already mentioned. Other early projects contemplated the opening of communication by water as far as possible between the Delaware and the Ohio at Pittsburgh. But none of these schemes assumed tangible form until about the time of the completion of the Erie Canal in 1825. Even if practicable in all cases they could not have been realized by individual effort; the State would have had to undertake them.



CHAPTER XIV.

THE BUILDING OF THE PENNSYLVANIA CANAL.

ON February 10, 1824, a committee of the Pennsylvania Legislature, to which had been referred the subject of improving the transportation facilities between the eastern and western parts of the State, recommended that a survey be made of a route "along the valleys of the Susquehanna, Juniata, Conemaugh, Kiskiminitas, and Allegheny rivers, with a view to a continuous canal from Philadelphia to Pittsburgh." On March 27, 1824, an act was passed authorizing three commissioners to "explore a route for a canal from Harrisburg to Pittsburgh by the waters of the Juniata and Conemaugh rivers, and by the west branch of the Susquehanna and Sinnemahoning with the waters of the Allegheny, and also a route from a point on the Schuylkill river in the county of Schuylkill, thence by Mahanoy creek, the river Susquehanna, the Moshannon or Clearfield and Blacklick creeks, the Conemaugh, the Kiskiminitas, and Allegheny rivers to Pittsburgh." These commissioners recommended the adoption of a canal route from Harrisburg to Pittsburgh by way of the Susquehanna, Juniata, and Conemaugh rivers, with a tunnel through the Allegheny mountains to be four miles long. On April 11, 1825, another act was passed providing for the appointment of five commissioners, who were authorized to explore and report upon two proposed routes of canal communication between the eastern and western parts of the State, and upon three less comprehensive and really local routes.

Only the first two of these routes need be described. One of these was "from Philadelphia through Chester and Lancaster counties, and thence by the west branch of the Susquehanna and the waters thereof to the Allegheny and Pittsburgh, also from the Allegheny to Lake Erie," and the other route was "from Philadelphia by the Juniata to Pittsburgh and thence to Lake Erie." On February 25, 1826, an act was passed providing for the com-

mencement of a canal "from the river Swatara, at or near Middletown," by the Juniata route, and from Pittsburgh eastward to the mouth of the Kiskiminitas, the work to be styled the Pennsylvania Canal. Three hundred thousand dollars were appropriated for the beginning of the work. On July 4, 1826, the first ground was broken for the canal near Harrisburg. The canal commissioners, now increased to nine in number, had decided that work on the canal westward should begin at Middletown, at the mouth of the Swatara river, to which point, as previously explained, canal and slackwater communication eastward to Philadelphia had been made or was about to be made by way of the Union Canal and the Schuylkill river. As finally determined by the act of March 4, 1828, the canal was to be continued eastward to Columbia, on the Susquehanna. It was also determined by the same act that connection from Columbia with Philadelphia should be made by railroad and not by canal, and also that a railroad was necessary from Hollidaysburg to Johnstown instead of a tunnel. Thus originated the most important public improvement ever undertaken by Pennsylvania—a more expensive enterprise than the Erie Canal and relatively more difficult than the Panama Canal of our day.

The Pennsylvania Canal, as its courses and distances were finally decided upon and established by the joint action of the Legislature, the canal commissioners, and the engineers, embraced a main line of combined canal and railroad from Philadelphia to Pittsburgh, with numerous canal branches, all the branches from the main line running northward, and also embracing other canals which did not directly connect with the main line. Beginning at Philadelphia the various divisions of the main line may be briefly summarized as follows: The Columbia Railroad, 81 miles long, connecting Philadelphia with Columbia, having two inclined planes, one at Philadelphia and one at Columbia; the eastern division of the canal, 47 miles long, extending from Columbia along the Susquehanna river to Duncan's Island, at the mouth of the Juniata; the Juniata division, 132 miles long, extending from Duncan's Island to Hollidaysburg; the Allegheny Portage Railroad, 36.44

miles long, crossing the Allegheny mountains, having ten inclined planes, and connecting Hollidaysburg with Johnstown, five ascending from Hollidaysburg to the Allegheny summit and five descending to Johnstown; and the western division, 104 miles long, extending from Johnstown along the Conemaugh, Kiskiminitas, and Allegheny rivers to Pittsburgh. The total length of the main line of the canal and connecting railroads was 400.44 miles. Work on the main line was prosecuted with vigor from its commencement and soon afterwards on some of its branches.

The branches of the Pennsylvania Canal, and the canals which were not directly connected with the main line but were part of the Pennsylvania Canal system, were as follows: The Susquehanna division, 42 miles long, commencing at Duncan's Island and extending along the Susquehanna river to Northumberland; the West Branch division, 76 miles long, extending from Northumberland along the west branch of the Susquehanna through Williamsport, Jersey Shore, and Lock Haven, to Farrandsville, in Clinton county; the North Branch division, 167.2 miles long, commencing at Northumberland and extending along the north branch of the Susquehanna through Berwick, Nanticoke, and other towns to the New York State line near Elmira, where it connected with the New York system of canals through the Junction Canal; the Delaware division, 60 miles long, extending from Bristol along the Delaware river to Easton, where it connected with the canal of the Lehigh Coal and Navigation Company; the Beaver division, 30.75 miles long, beginning at the mouth of the Beaver river, at Beaver, on the Ohio, 28 miles below Pittsburgh, and extending to New Castle; the Erie Extension, 105.50 miles long, extending from New Castle to Erie. There was also a branch of the main line, the Wiconisco Canal, $12\frac{1}{2}$ miles long, commenced in 1838, extending from Duncan's Island along the Susquehanna to Wiconisco, where it connected with the Lykens Valley Railroad. There were various feeders of the canals, aggregating 13 miles in length, which need not be mentioned in detail. The entire length of canals and railroads forming the Pennsylvania Canal system was 907.39 miles, of

which 789.95 miles were canal and 117.44 miles were railroad, all undertaken and built at the expense of the State.

In 1834 the canal commissioners announced that 600 miles of canal and 120 miles of railroad were finished and that the main line from Philadelphia to Pittsburgh was open for business. A single track of the Portage Railroad had been completed on November 26, 1833. On April 16, 1834, the whole line was opened, the Columbia Railroad, which formed the last link, having been finished on that day. The Beaver division was opened for business on May 28, 1834, and the North Branch division on July 4, 1834. Other branches were opened at later periods. Some of them, indeed, were not undertaken until after the main line had been some time in operation. The whole time consumed in the construction of the main line was about eight years, the same number of years as were occupied in the construction of the Erie Canal.

The Erie Canal, 352 miles long, was not only nearly fifty miles shorter than the main line of the Pennsylvania Canal and its railroad connections, in all about 400 miles long, but its builders encountered fewer engineering difficulties than those which confronted the builders of the Pennsylvania system of canals and railroads, while its cost of construction was very much less. The Erie Canal passed through a territory free from any serious mountain elevations to be overcome by locks or otherwise, but the engineers of the Pennsylvania Canal were compelled to overcome by inclined planes and a railroad the almost insurmountable obstruction of the Allegheny mountains between Hollidaysburg and Johnstown and to abandon the project of building a canal through the elevated country between Philadelphia and Columbia and substitute a railroad. Ringwalt gives a diagram showing the elevation of the Erie Canal from Buffalo to Albany and another showing the elevation of the Pennsylvania Canal and its connecting railroads from Philadelphia to Pittsburgh. He says: "In constructing the Erie Canal the rise and fall along the entire line was only 692 feet. In adopting on the Pennsylvania main line system the Portage Railroad as a device for overcoming the elevation of the Allegheny

mountains there was an ascent from Johnstown, west of the mountains, to the summit of 1,171.58 feet in 26.59 miles, and on the eastern side of the mountains a descent from the summit to Hollidaysburg of 1,398.71 feet in 10.10 miles. In other words, the Pennsylvania main line system, by the aid of the Portage Railroad, undertook to overcome, in a distance of 36.69 miles, about twice the elevation that it was necessary to overcome, by locks, along the entire length of the Erie Canal." Of the ten inclined planes on the Portage Railroad the longest was 3,116.92 feet long, with a rise of 307.60 feet, and the shortest was 1,480.25 feet long, with a rise of 130.50 feet. To which we add the length and elevation of the two inclined planes on the Columbia Railroad, as follows: The plane at Belmont, near Philadelphia, was 2,805 feet long, with a rise of 187 feet, and the plane at Columbia was 1,800 feet long, with a fall of 90 feet.

The work of building the Columbia Railroad was commenced in 1829 and completed in 1834, but about twenty miles of the eastern end of the road were opened for traffic in September, 1832. Work on the construction of the Portage Railroad was commenced on April 12, 1831, and on March 18, 1834, when navigation on the canal opened, the road was opened for use as a public highway.

Horses and locomotives were used on both railroads. The first locomotive used on the Portage Railroad was built in Boston in 1834 and named *Boston*. Solomon W. Roberts says that "it was a light engine, with one pair of driving wheels, which were made of wood, with iron hubs and tires." The fuel used was wood. On the Columbia Railroad two locomotives, built in Philadelphia by Matthew W. Baldwin in 1834, were in use in that year, when the road was opened. The *Pittsburgh Gazette* for Monday, November 25, 1833, referring to the completion of the Portage Railroad, contains the following reference to the first railroad car that was used on that road: "We are informed that a railroad car, made after the most approved models and the designs of the chief engineer, has been constructed in this city, and that it was forwarded, on Saturday evening, by the canal line, to Johnstown,

where it will arrive this evening. It is supposed that this is the first railroad car ever constructed west of the Allegheny mountain." The first car passed over the Portage Railroad, from Johnstown to Hollidaysburg, on Tuesday, November 26, 1833. This was probably the car above referred to. Presumably it was a passenger car.

In 1852 the Commonwealth commenced the construction of a new Portage Railroad, to avoid the inclined planes, parts of the old road to be utilized and a tunnel at the summit of the Alleghenies to be built. Soon after this work was completed the main line of the canal was sold to the Pennsylvania Railroad Company in 1857. Storey says that the New Portage was finished in the fall of 1855 and was operated only in 1856 and to August, 1857.

The Portage Railroad over the Alleghenies was regarded at the time of its completion and long afterwards as an engineering wonder and justly so. No engineering undertaking anywhere up to that time had been more difficult and none had been more successfully accomplished. Other difficult feats of engineering skill characterized the work of building the Pennsylvania Canal and its railroad connections, but the difficulties overcome in building the Portage Railroad surpassed them all. As already stated, there were ten inclined planes on this railroad, five on the eastern slope of the Alleghenies and five on the western slope. The first railroad tunnel that was built in the United States formed a part of the Portage Railroad. Solomon W. Roberts, one of the engineers who located the road, has left this record of the tunnel in an address which he read before the Historical Society of Pennsylvania on April 8, 1878. He said: "At the staple bend of the Cone-maugh, four miles from Johnstown, a tunnel was made through a spur of the Allegheny, near which the stream makes a bend of two miles and a half. The length of the tunnel was 901 feet, and it was 20 feet wide and 19 feet high within the arch, 150 feet at each end being arched with cut stone. Its cost was about \$37,500. This was the first railroad tunnel in the United States. Inclined plane No. 1, being the plane nearest to Johnstown, was located at the western end of the tunnel."

Mr. Roberts says: "In 1838 there was published in London a book called *A Sketch of the Civil Engineering of North America*, by David Stevenson, a civil engineer. The author was a son of the distinguished engineer of the Bell Rock lighthouse. In his sixth chapter, when speaking of the Portage Railroad, he says that 'America now numbers among its many wonderful artificial lines of communication a mountain railway, which, in boldness of design and difficulty of execution, I can compare to no modern work I have ever seen, excepting perhaps the passes of the Simplon, and Mont Cenis in Sardinia; but even these remarkable passes, viewed as engineering works, did not strike me as being more wonderful than the Allegheny Railway in the United States.'" Mr. Roberts also says that "Michel Chevalier, the distinguished French engineer and political economist, visited the railroad and gave a description of it in his book on the public works of the United States which was published in Paris in 1840."

As already stated, the main line of the Pennsylvania Canal with its connecting railroads was opened for business throughout its entire length in the spring of 1834, the branches being opened at later dates. Important and valuable as these improvements were, in the aid they gave to the development of the material resources of Pennsylvania and in bringing into closer relations the whole people of the Commonwealth, it is painful to record the fact that the operation of the main line and its more important branches virtually came to an end within thirty years after it began. This ever to be regretted termination of a great and useful enterprise was due primarily to the inefficient and sometimes corrupt management of the entire system and next to the competition of the Pennsylvania Railroad, the building of which was authorized by an act of the Legislature dated April 13, 1846, and which was completed to Pittsburgh on December 10, 1852. On August 1, 1857, the State sold the whole of the main line to the Pennsylvania Railroad Company for \$7,500,000, which soon abandoned the greater part of the canal.

In his *History of Cambria County* Storey says that Ephraim Stitt, of Blairsville, was probably the last cap-

tain to bring through freight from Pittsburgh to Johnstown. He brought a cargo consigned to the Cambria Iron Company in 1859. About December 1, 1860, the *Monongahela*, of which George Rutledge was captain, brought a cargo of salt and grain from Livermore to Johnstown, and this was probably the last boat to bring a load of merchandise to the latter place. There were no lock-tenders at this time. On May 1, 1863, says Mr. Storey, the Pennsylvania Railroad Company abandoned the canal between Johnstown and Blairsville.

Horses and mules constituted the only power that was used in moving the boats on the Pennsylvania Canal. An experiment in the use of steam power was made on the western division from Pittsburgh to Johnstown with unsatisfactory results. A few years ago we received the following circumstantial account of this experiment from the Honorable Cyrus L. Pershing, who was in early life a resident of Johnstown. "A steamboat once made a round trip from Pittsburgh to Johnstown. This steamboat had been used as a ferry-boat, propelled by horse power, on the Monongahela river at Pittsburgh. The machinery was taken from a mill or manufacturing establishment, (not heavy, of course,) in Pittsburgh. The boat stopped at towns along the route, was tied up at night, and in the daytime was compelled to make very slow progress to avoid washing away the banks of the canal. Two weeks were consumed in reaching Johnstown, where, for some days, the boat lay in the slip on the upper side of the old brick warehouse. Captain Carothers was the commander. He was afterwards a member of a wholesale grocery firm on Liberty street, Pittsburgh. This experiment settled in the negative the practicability of using steam on the Pennsylvania Canal." Judge Pershing thought that the event he minutely describes occurred in all probability in 1834. This date is confirmed by Storey, who says that an account of the experiment appeared in the *Ebensburg Sky* in 1834. The judge says that the boat was named *Adaline*.

Reference has already been made to the first railroad tunnel that was built in the United States, four miles from Johnstown, forming part of the Portage Railroad. On the

western division of the Pennsylvania Canal, at a place then and now called Tunnelton, in Indiana county, about half way between Johnstown and Pittsburgh, a tunnel was built between 1827 and 1829 through one of the foothills of the Alleghenies. This tunnel connected with an aqueduct over the Conemaugh river, at that point a stream of considerable width, and the whole effect of the united tunnel and aqueduct was most impressive. Drinker, in his great work on *Tunneling*, says that the first canal tunnel in the United States was built at Auburn, in Schuylkill county, Pennsylvania, by the Schuylkill Navigation Company, between 1818 and 1821, and that the second canal tunnel in the United States was built near Lebanon, in Lebanon county, Pennsylvania, between 1824 and 1826, by the Union Canal Company. The tunnel at Tunnelton, above mentioned, was the third canal tunnel that was built in the United States. A tunnel through Grant's Hill at Pittsburgh, completed between 1827 and 1830, and forming part of the Pennsylvania Canal, was the fourth. It appears, therefore, that the first railroad tunnel and the first four canal tunnels in the United States were built in Pennsylvania.

In addition to the Pennsylvania Canal, including its branches and other connections, other canals were built in Pennsylvania in the first half of the nineteenth century, some of which have been mentioned. Of others not heretofore described the most important is the canal of the Lehigh Coal and Navigation Company, completed in 1829 and extending from Mauch Chunk to Easton. Gordon says of this enterprise: "The Legislature, early aware of the importance of the navigation of the Lehigh, passed an act for its improvement in 1771, and others in 1791, 1794, 1798, 1810, 1814, and 1816." But no work of consequence was done under any of these acts until 1818, in August of which year the Lehigh Navigation Company commenced the improvement of the Lehigh river. In 1820 the Lehigh Navigation Company and the Lehigh Coal Company were consolidated as the Lehigh Coal and Navigation Company, and in this year Lehigh coal was sent to Philadelphia by means of the improvement that

had been made in the navigation of the Lehigh river, but the canal was not completed until 1829, as stated above.

The sale of the main line of the Pennsylvania Canal to the Pennsylvania Railroad Company in 1857 was soon followed by the abandonment of nearly all the main line, as has already been mentioned, and by the abandonment or sale of such parts of the entire Pennsylvania Canal system as had not been previously abandoned or sold. In 1858 the Susquehanna, West Branch, and North Branch divisions were sold to the Sunbury and Erie Railroad Company, which soon sold them to other companies, the net result being that in a short time large parts of these divisions were abandoned. In 1858 the Delaware division was also sold to the Sunbury and Erie Railroad Company, which sold it in the same year to the Delaware Division Canal Company. On August 1, 1843, the Erie Extension had been sold to the Erie Canal Company, and on January 1, 1845, the Beaver division had been sold to the same company. In 1870 and 1871 this company ceased to operate both divisions, and in 1871 the whole canal from Beaver to Erie was abandoned. The Union Canal was abandoned in 1884. The Bald Eagle Canal was abandoned in 1885.

We need not further note in detail the decline of canal navigation in Pennsylvania. Only about one-third as many miles of canal are now actively or nominally in operation as were in active operation before the completion of the Pennsylvania Railroad from Philadelphia to Pittsburgh in 1852. In 1840 there were about 1,000 miles of canal in Pennsylvania. In 1900 it was officially stated that there were then only four canals in operation in this State—the Delaware Division Canal, 60 miles long, extending from Bristol to Easton; the canal of the Lehigh Coal and Navigation Company, 48 miles long, extending from Coalport, near Mauch Chunk, to Easton; the canal of the Pennsylvania Canal Company, 144 miles long, extending from Nanticoke to Columbia; and the canal of the Schuylkill Navigation Company, 89.88 miles long, extending from Port Clinton to Philadelphia. The total mileage was 341.88 miles, but the larger part was only nominally operated.

CHAPTER XV.

THE PENNSYLVANIA CANAL IN OPERATION.

THE system of internal improvements, known as the main line of the Pennsylvania Canal, which connected the Delaware river with the Ohio river and Philadelphia with Pittsburgh, and which has been described in the preceding chapter, was undertaken in 1826 by the Commonwealth of Pennsylvania and completed in 1834. As already stated, it was opened for freight and passenger traffic throughout its entire length early in the latter year, long before the Pennsylvania Railroad was projected or more than dreamed of. This main line embraced a railroad from Philadelphia to Columbia, 81 miles, a canal from Columbia to Hollidaysburg, 179 miles, a railroad from Hollidaysburg to Johnstown, 36.44 miles, and a canal from Johnstown to Pittsburgh, 104 miles, making a total length of 400.44 miles from Philadelphia to Pittsburgh. Upon the completion of important divisions of the main line, and particularly after the completion of the whole line, many transportation companies for the conveyance of freight and passengers were organized, with principal offices and warehouses at Philadelphia and Pittsburgh and branch offices and other warehouses at Columbia, Hollidaysburg, and Johnstown.

Through the courtesy of Frank L. Neall, of Philadelphia, a gentleman of antiquarian tastes, we have had an opportunity to examine several hundred bills of lading, freight receipts, etc., issued by the transportation companies and forwarding merchants that were engaged in business on the main line of the canal between 1836 and 1850. These papers were written with quill pens in ink that invariably holds its color well, and they are usually embellished with wood cuts which represent in a crude way the boats and cars and locomotives of that period. The printing business was not then one of the fine arts, as it is to-day. Cars and locomotives are at first represented

with only four wheels, but in later years locomotives are shown with six wheels. Valuable information is contained in these papers concerning the character of the freight that was shipped in those days, the rates of freight, and the time that was required to carry it from one point to another ; also giving the names of the transportation companies and their facilities for hauling freight.

First, of the transportation companies. We quote from these old documents the names of the following companies which had offices and warehouses in both Philadelphia and Pittsburgh, with the year or years in which they are first mentioned ; also in some instances the names of their Philadelphia and Pittsburgh agents. The spelling we give is exactly as we find it. In some instances, as will be observed, the same company is described by more than one title. 1836—Reliance Transportation Company ; 1837—Western Transportation Company, D. Leech & Co.'s Line ; 1838—the same company, Leech & Co.'s Line ; 1837—Union Transportation Company, Rail Road Line ; 1837—John Dougherty, Agent for Reliance Transportation Line ; 1839—John Dougherty, Agt., Reliance Transportation Company's Line of Portable Iron Boats ; 1837—The Despatch Transportation Line ; 1837—The Despatch Transportation Company, John White & Co. ; 1838—James O'Connor & Co.'s Portable Car Body Line, to Pittsburgh ; also Pittsburgh Transportation Line, Rail Road Line of Portable Car Bodies, James O'Connor & Co. ; 1840—James M. Davis & Co., Reliance Portable Boat Line ; 1841—Mechanics Independent Line ; 1846—Binghams' Line, and Binghams' Transportation Line ; proprietors, William Bingham, Thomas Bingham, Jacob Dock, and W. A. Stratton ; 1846—Craig, Bellas & Co., Citizens' Portable Boat Line ; 1840, 1846, and 1849—Reliance Portable Boat Line, James M. Davis & Co., Philadelphia, and John McFaden & Co., Pittsburgh ; 1841—The Pennsylvania and Ohio Transportation Rail Road Line, James Steel & Co. ; 1849—Pennsylvania and Ohio Transportation Line to Pittsburgh, via Rail Roads and Canal, and Pennsylvania and Ohio Transportation Co. ; 1846 and 1850—Union Transportation Rail Road Line for Pittsburg.

In addition to the above details gleaned from Mr. Neall's papers we add that Leech's Line, Bingham's Line, the Pennsylvania and Ohio Line, and the Union Line were the leading transportation companies on the main line of the Pennsylvania Canal throughout its whole history. The Pittsburgh agents of the Pennsylvania and Ohio Line were Clark & Thaw—Thomas Clark and William Thaw; of Leech's Line, George Black; of the Union Line, Henry Graff; and of Bingham's Line, William Bingham. These and other lines, which strictly speaking were freight carriers, also carried passengers, chiefly immigrants going to the Great West. Other companies, called "packet lines," were exclusively devoted to the carrying of passengers.

The freight that was shipped from Philadelphia to Pittsburgh over the Pennsylvania Canal, as described in these old papers of Mr. Neall, was largely composed of queensware, earthenware, hardware, glassware, and dry goods. There can be no doubt that most of these articles were imported. We note one shipment of axes. Other articles shipped will be mentioned in another paragraph. The mention of crates and casks of queensware is of frequent occurrence, crates predominating. When emptied of their contents these foreign-made crates were often used in those days in winter by farmers and others as improvised sleigh bodies, placed on sled runners that may have been used for hauling wood, and sometimes placed on light runners called "Yankee jumpers."

In 1837 D. Leech & Co. promised to deliver packages of merchandise from Philadelphia to Pittsburgh "in fifteen days, Sundays excepted." In 1838 James O'Connor & Co.'s Portable Car Body Line advertised what would be called in our day a fast freight service in boats carrying fifteen tons, through to Pittsburgh in five days, but its boats carrying thirty tons would require eight days. In 1839 a freight receipt issued by John Dougherty stipulated that the merchandise receipted for was to be delivered at Pittsburgh "within twelve days, Sundays and unavoidable delays excepted," but in 1846 James M. Davis & Co. agreed to deliver freight at Pittsburgh in eight days, with the same reservations, and in 1849 D. Leech & Co. had no

better schedule to offer, while in the same year the Pennsylvania and Ohio Line retained the twelve days' provision in its freight receipts. In 1850 James M. Davis & Co. increased their time to Pittsburgh to ten days. In 1846 Bingham's Line promised to deliver at Philadelphia freight shipped at Pittsburgh "within fifteen days, Sundays excepted." Eight days was about the shortest time that would ordinarily be required to deliver freight between Philadelphia and Pittsburgh. It is not probable that James O'Connor & Co. ever carried freight from Philadelphia to Pittsburgh in five days. They may have done this in six days. The name of this company was changed in the forties to Taaffe & O'Connor.

The rates of freight on the Pennsylvania Canal from Philadelphia to Pittsburgh were much higher in the early years of the canal's existence than were afterwards charged, and yet all these rates were very high as compared with the railroad rates with which the present business world is familiar. In 1837 the through rate on dry goods, drugs, queensware in crates, leather, hides, shoes, wool, fruits, etc., was \$2.35 per 100 pounds; on hardware, dye-stuffs, paints, etc., it was \$2.10; on hats, bonnets, etc., \$3.60; on coffee and groceries, \$1.85; on furniture, \$3.60; on carriages, \$4.10; on fish, \$1.20; and on queensware in casks, \$2.85. In 1839 there were some slight reductions in the rates, dry goods, etc., paying \$2.25 per 100 pounds; groceries, tin in boxes, etc., \$1.65; hardware, queensware, etc., \$2; and carriages, \$3.75. Herring paid \$2.25 per barrel and mackerel \$2.50. A few rates were advanced in this year. In 1849 the rates had been much reduced below those of 1839, dry goods, bonnets, shoes, hats, etc., being charged only 90 cents per 100 pounds; muslins in bales and burlaps, 80 cents; queensware and codfish, 60 cents; tin and copper in sheets, 60 cents; coffee, 50 cents; groceries, sheet iron, hoop iron and nails, hardware, machinery, etc., 70 cents; mackerel, shad, and pickled herring per barrel, \$1.25, and dry herring, \$1.12½. These rates probably ruled for several years after 1849. In 1846 the rate on glassware from Pittsburgh to Philadelphia by Bingham's Line was 83 cents per 100 pounds.

The wood cuts which are prominent features of the old papers we have referred to, and which were intended to illustrate the methods of transportation employed by the various companies mentioned, tell a story of their own that is very interesting. Not only are the primitive locomotives and freight cars illustrated with a fair degree of accuracy, but, of greater interest, the extraordinary means that were then employed to carry freight between Philadelphia and Pittsburgh are fully shown. As has already been stated, the main line of the Pennsylvania Canal included two railroads, which aggregated in length over one-fourth of the entire line. Most of the transportation companies used both cars and boats, necessitating the handling of all freight when transferred from cars to boats or from boats to cars. From Philadelphia to Pittsburgh, or *vice versa*, this trans-shipment occurred three times, at Columbia, Hollidaysburg, and Johnstown. But there were two transportation methods employed in carrying freight from one end of the main line to the other end without breaking bulk at any point.

The boats used by James O'Connor & Co. were hulls only, except that there was a cabin at the stern of each boat, the hulls being built of dimensions adapted to the reception of a fixed number of cars, or car bodies, which could be transferred from their trucks by windlasses that would lift them into the boats. In the same way the cars could be lifted out of the boats and placed upon trucks. The car-boats, as these boats were called, were abandoned before 1850. The other method referred to dispensed with cars entirely and embraced portable boats, divided into either three or four sections, each with the necessary bulkheads, and each being but little longer than an ordinary freight car of that day and of practically the same width. When in the water these sections would be united by appropriate side fastenings, making a complete boat, the bow and stern sections being rounded as in other boats. When taken from the water they were detached and deftly moved over trucks which had been run into the water upon a slightly inclined railroad track that was connected with the railroad over which the boat was to pass, a stationary

engine pulling out the sections. When the boat would come to the end of its railroad journey it would be run into the water on its trucks and put together as we have described. The trucks were curved to fit the rounded bottoms of the boats. Several companies used these portable boats, which were continued in use long after 1850.

Reference has been made to the packet boats on the Pennsylvania Canal which were used exclusively for carrying passengers. In his *American Notes* Charles Dickens describes his experience in 1842 on one of these packets, which was not always satisfactory, but he gives us these pleasing pictures of the scenery along the line of the canal: "The exquisite beauty of the opening day, when light came gleaming off from everything; the lazy motion of the boat, when one lay idly on the deck, looking through, rather than at, the deep blue sky; the gliding on at night, so noiselessly, past frowning hills, sullen with dark trees, and sometimes angry in one red burning spot high up where unseen men lay crouching round a fire; the shining out of the bright stars, undisturbed by noise of wheels or steam or any sound than the liquid rippling of the water as the boat went on; all these were pure delights. . . . Sometimes, at night, the way wound through some lonely gorge, like a mountain pass in Scotland, shining and coldly glittering in the light of the moon, and so closed in by high steep hills all round that there seemed to be no egress save through the narrower path by which we had come, until one rugged hillside seemed to open, and, shutting out the moonlight as we passed into its gloomy throat, wrapped our new course in shade and darkness." A Pennsylvania historian once wrote as follows of the scenery along the canal in its palmy days: "The entire region through which the canal passed was one of enchantment. The beautiful rivers, then uncontaminated by the refuse of large towns, the wooded hillsides, then almost untouched by the axe of the lumberman, the smiling villages, at long distances apart, must have brought to the traveler, as he passed by them, one long happy dream of contentment."

Packet boats on the western division of the canal,

from Johnstown to Pittsburgh, quit running between these places in August, 1851, but made regular trips from Lockport to Pittsburgh in 1852.

Among the old papers referred to we find two receipts issued by the "Pennsylvania Rail Road Co., Craig & Bellas, Agents, Broad Street, Philadelphia," dated respectively October 12, 1850, and November 6, 1850, the first for goods shipped to Newport, Pennsylvania, and the other for goods shipped to Huntingdon, Pennsylvania. The Pennsylvania Railroad Company was chartered in 1846 to build a railroad from Harrisburg to Pittsburgh, railroad connections already existing between Philadelphia and Harrisburg, but work on the construction of the road did not begin until 1847, and it was not until 1850 that the road was completed to Duncansville, so that the two receipts above referred to were among the earliest issued in the name of the company. In 1857 the main line was purchased by the Pennsylvania Railroad Company, and in a few years such portions of the line as were not absorbed by the Pennsylvania Railroad as part of its road-bed were either neglected or actually abandoned. The division of the canal from Johnstown to Pittsburgh was abandoned in 1864, and the larger part of the divisions from Columbia to Hollidaysburg in more recent years, although little used throughout their entire length for many preceding years. To-day the sites of large sections of the canal proper and of its basins, feeders, wharves, aqueducts, and bridges, and also of the connecting railroads, are hard to find even by old men who remember all of them, while the present generation scarcely realizes that there ever was a Pennsylvania Canal.



CHAPTER XVI.

EARLY RAILROADS IN THE UNITED STATES.

SHORT railways for hauling coal, but of primitive construction and operated by hand power or horse power, were in use in England as early as the middle of the seventeenth century. The first railroad in the world for the transportation of both freight and passengers, the Stockton and Darlington Railway, in England, was opened to the public in 1825, this event occurring on September 27. It was primarily intended to carry only freight, nor was the use of locomotives in moving trains on this road at first contemplated. Authority to use "locomotive engines" was granted by Parliament in 1823. This road was formally opened with one of Stephenson's locomotives, and in one month afterwards passengers were regularly carried in a single coach. Horse power was, however, generally employed for several years, and during this period few passengers were carried. This road had four inclined planes, with stationary engines. It was not until the Liverpool and Manchester Railway, also in England, was opened to the public on September 15, 1830, that the carrying of passengers by rail and the use of steam power in moving trains became recognized features of railroad practice. Stephenson's *Rocket* was successfully tested on this road in October, 1829.

In *Railway Problems*, written by J. S. Jeans and published in London in 1887, these facts are stated: "Many towns petitioned against having railways brought near them and demanded that railways and canals alike should be kept several miles from their borders. The vested interests of stage-coach proprietors and carriers offered a strenuous opposition to the new system. The medical faculty were pressed into the service of the opposition, with direful forebodings as to the physical evils that would follow from traveling at the rate of thirty to forty miles an hour. Canal proprietors urged that they had already pro-

vided all the facilities necessary for heavy traffic, and that it would be grossly unjust to them to allow a rival interest to step in and deprive them of the fruits of their efforts and expenditure. In some cases railway companies were forbidden to use 'any locomotive or movable engines' without the consent of the owners and occupiers of lands through which their line passed. Many wiseacres pronounced that the system would, after all, prove a failure, and the *Quarterly Review* of March, 1825, remarked oracularly that 'as to those persons who speculate on making railways general throughout the kingdom, and superseding all the canals, all the wagons, mail and stage coaches, post-chaises, and, in short, every other mode of conveyance by land and by water, we deem them, and their visionary schemes, unworthy of notice.'"

In a speech in the House of Commons in opposition to the granting of a charter to the Liverpool and Manchester Railway Company Admiral Sir Isaac Coffin said: "I would not consent to see the widow's premises and strawberry beds invaded. Railroad trains would take many hours to perform the journey between Liverpool and Manchester, and in the event the scheme succeeds what, I would like to ask, what was to be done for all those who had advanced money in making and repairing turnpike roads? What with those who still wished to travel in their own or hired carriages, after the fashion of their forefathers? What was to become of the coachmakers, harnessmakers, coachmasters and coachmen, innkeepers, horse breeders, and horse dealers? Was the House aware of the smoke and the noise, the hiss and whirl, which locomotive engines, passing at the rate of ten or twelve miles an hour, would occasion? Neither the cattle plowing in the fields, nor grazing in the meadows, would view them without dismay. Iron would be raised in price one hundred per cent., or more probably exhausted altogether. It would be the greatest nuisance, the most complete disturber of quiet and comfort in all parts of the kingdom, that the ingenuity of man could invent."

Between 1825 and 1830 the policy of introducing railroads in the United States for the transportation of both

freight and passengers received a great deal of attention. It was decided to give them a trial. A few short lines of railroad for hauling stone and other heavy products had previously been built in this country. None of them were intended to carry passengers. One of these was built on Beacon Hill, Boston, by Silas Whitney, in 1807; another by Thomas Leiper, in Delaware county, Pennsylvania, in 1809; and another at Bear Creek furnace, in Armstrong county, Pennsylvania, in 1818. The tracks of these roads were composed of wooden rails, and at least the Beacon Hill road used wooden wheels with iron axles. Other short railroads for similar service soon followed, but the wooden rails were strapped with flat iron bars. In 1828 the construction of our first passenger railroad, the Baltimore and Ohio Railroad, was commenced, and in 1830 fifteen miles of this road were opened for both freight and passenger traffic, horse power being used. Other railroads in this country for the transportation of both freight and passengers were partly if not wholly completed in 1830 and 1831. Locomotives of American construction were introduced on American railroads in these and immediately succeeding years, but most of the early railroads in this country were originally operated with horse power.

During the early discussion of the feasibility of introducing railroads in this country for general transportation purposes many curious opinions of a favorable as well as an unfavorable character were expressed, some of which may well be preserved. One writer in referring to that period says: "It was admitted that for novelty and speed a railroad might be preferable to stage coaches and canal boats, but it was contended that for a long journey or for a man traveling with a family a canal was better. It was pointed out that on a canal boat passengers could eat their meals, walk about and write a letter, whereas in a railway carriage these things were then impossible. In a canal boat, too, the passengers were as safe as at home, whereas in a railway car nobody could tell what might happen."

In their annual report to the Legislature of Pennsylvania in December, 1831, the canal commissioners said: "While the board avow themselves favorable to railroads

where it is impracticable to construct canals, or under some peculiar circumstances, they can not forbear expressing their opinion that the advocates of railroads generally have overrated their comparative value. The board believe that, notwithstanding all the improvements that have been made in railroads and locomotives, it will be found that canals are from two to two and a half times better than railroads for the purposes required of them by Pennsylvania."

In July, 1855, while we were publishing the *Johnstown Tribune*, there was placed in our hands a copy of the *Greensburg Gazette*, dated March 25, 1825. Mr. Frederick J. Cope, a gentleman of more than ordinary intelligence, was then the editor and publisher of the *Gazette*. In the copy of the *Gazette* referred to Mr. Cope gave prominence to a discussion of the new method of transporting all kinds of freight and also passengers by railroad, with steam power applied through stationary engines or by locomotives. First there is presented a wood-cut illustration of "a section of a railroad, with a view of a locomotive, having in tow three transportation wagons," copied from a communication in the *Baltimore American*, together with an explanation of the method of operating the road with the aid of the locomotive. The following is the explanation in the *American*. We quote it exactly as it was printed.

"Believing that a diagram of a railway, together with the steam and other wagons upon it, would tend to render the subject more easily understood I have caused one to be engraved. It will be observed, in referring to this diagram inserted above, that the steam engine has six wheels, four of which, the two foremost and two hindmost, have grooves to fit the rail like those of the wagons intended to carry merchandise and rest upon the smooth rail, and that the two middle, which are cog wheels, play into the cogs of the rail, which are somewhat nearer to the surface of the earth than the smooth edge. The four wheels which run upon the smooth surface support the whole weight of the steam engine. Of course the middle or cog wheels are not pressed upon, and being put into motion by the machinery of the engine serve to propel the wagons in the

same manner as the wheels of the steam boats act. By the loco-motive engine fifty tons of goods may be conveyed by a ten-horse-power engine, on a level road, at the rate of six miles an hour, and lighter weights at a proportioned increase of speed. Carriages at the rate of twelve or fourteen miles per hour. For canals it is necessary to have a dead level, but not so for railroads; an engine will work goods over an elevation of *one-eighth of an inch to the yard*. Where the ascent or descent is rapid, and can not be counteracted by cutting or embankments, recourse must be had to permanent engines and inclined planes, just as recourse is had to locks for canals, but here again the railroad system has the advantage; *the inclined plane causes no delay, while locking creates a great deal.*"

That such crude engineering and mechanical notions should have existed in 1825 is only another proof of the truth of the hackneyed remark that far more scientific and mechanical progress was made in the nineteenth century than in all preceding centuries. In a few years after 1825 all the theories and estimates of the writer in the *Baltimore American* were completely discredited.

Notwithstanding the favorable opinion of the writer in the *American* the editor of the *Gazette* was skeptical. He commented on the cut and the explanation as follows: "We have prepared and placed on the first page of our paper an engraving representing a loco-motive engine, having in tow three transportation wagons, accompanied by an explanation from another paper. It would be impossible, we think, to bring the steam wagon into successful operation between the East and the West. It requires too many stationary engines to propel the wagons over our numerous hills. It would be necessary to have half a dozen in sight of this town, for we are situated on a hill and surrounded by them on all sides."

It is only a little more than eighty years since these remarkable opinions were expressed by the editor of the *Gazette*. The "steam wagon" has done very good work between the East and the West for more than sixty years and without the assistance of stationary engines anywhere near Greensburg. The "numerous hills" of Westmoreland

county, referred to by the editor of the *Gazette*, did not offer as serious obstacles to the building of a railroad as real mountains in our country did elsewhere, but all these obstacles were soon overcome. If stationary engines were at first used on some lines of railroad in this country, particularly on the Allegheny Portage Railroad, they were abandoned many years ago.

The following details of the first American railroad that was built for the conveyance of both freight and passengers we glean from *Poor's Manual of the Railroads of the United States* and from the records of the Baltimore and Ohio Railroad Company. Prior to the completion of the first section of the road of this company all the railroads in the United States that had been in operation were built to haul coal or other heavy materials.

The Baltimore and Ohio Railroad Company was chartered by the Maryland Legislature on February 28, 1827, and by the Virginia Legislature on March 8, 1827. By the charter its capital stock was fixed at \$5,000,000, with the right to organize on the subscription of one-fifth that amount. It was provided in the charter that the road was to be built from Baltimore to a point on the Ohio river not lower than the mouth of the Little Kanawha, where Parkersburg stands. Its terminus on the Ohio was subsequently fixed at Wheeling. As there existed a probability that the road would be extended to Pittsburgh the Pennsylvania Legislature "confirmed" the charter of the company on February 22, 1828. In April, 1827, the required subscription having been obtained, the company was organized and the surveys of the road were at once undertaken. On the 4th of July, 1828, the line having been finally located to Point of Rocks, the construction of the road was commenced with considerable ceremony, the venerable Charles Carroll, of Carrollton, laying the "corner stone." In 1829 the track was finished to Vinegar Hill, a distance of about seven miles, and "cars were put upon it for the accommodation of the officers and to gratify the curious by a ride." The progress of construction of the road from Baltimore to Wheeling is shown in the following statement, which has been officially verified.

From	To	Length in miles.	Date of opening.
Baltimore	Ellicott's Mills	15.00	May 24, 1830
Ellicott's Mills	Frederick	44.30	Dec. 1, 1831
Frederick	Point of Rocks	10.90	April 1, 1832
Point of Rocks	Harper's Ferry	12.50	Dec. 1, 1834
Harper's Ferry	Opposite Hancock	41.30	June 1, 1842
Opposite Hancock	Cumberland	55.20	Nov. 5, 1842
Cumberland	Piedmont	28.10	July 21, 1851
Piedmont	Fairmont	96.00	June 22, 1852
Fairmont	Wheeling	77.70	Jan. 1, 1853

Frederick is situated on a branch three and a half miles from the main line of the road, which accounts for an increase in the table in its total length from 377.40 miles, as given in *Poor's Manual* for 1904, to 381 miles. The Washington branch was opened from Relay to Bladensburg on July 20, 1834, and to Washington on August 25, 1834. It will be noticed that a quarter of a century elapsed before the road was opened from Baltimore to Wheeling in 1853.

The first section of the Baltimore and Ohio Railroad after its opening to Ellicott's Mills was operated by horse power. On August 30, 1830, a small locomotive, built at Baltimore by Peter Cooper, was successfully experimented with on this section as a substitute for horse power, Mr. Cooper being his own engineer. Soon afterwards other and more powerful locomotives were introduced.

The Pittsburgh and Connellsville Railroad Company was chartered on April 2, 1837, by the Legislature of Pennsylvania. On April 18, 1853, the charter was amended so as to authorize the extension of the road to Cumberland, Maryland, to which place it was opened from Pittsburgh in June, 1871. This road, now forming the Pittsburgh division of the Baltimore and Ohio Railroad, was leased on December 13, 1875, to the Baltimore and Ohio Railroad Company for fifty years from January 1, 1876, the lease to be renewable in perpetuity.

The section of the Pittsburgh and Connellsville Railroad between Connellsville and West Newton was opened for traffic on September 13, 1855. The road between Connellsville and Turtle Creek was opened on January 14,

1857, and the entire line from Connellsville to Pittsburgh was opened on October 10, 1861.

In 1907 the Baltimore and Ohio Railroad Company owned, operated, or controlled 4,525.51 miles of main track.

In 1826 the New York Legislature granted a charter for the construction of the Mohawk and Hudson Railroad, for the carriage of freight and passengers from Albany to Schenectady, a distance of seventeen miles. Work on this road, however, was not commenced until August, 1830. It was opened for traffic on September 12, 1831. The next passenger railroad enterprise that was chartered in the United States was the Charleston and Hamburg Railroad in South Carolina, which was chartered on December 19, 1827. Six miles of this road were completed in 1829, but they were not opened to the public until December 6, 1830, when a locomotive was placed on its track. The road was completed in September, 1833, a distance of 135 miles. At that time it was the longest continuous line of railroad in the world.

It will be seen that the first passenger railroad in the United States that was opened to the public was a Maryland enterprise and that the second was a South Carolina enterprise. The Mohawk and Hudson Railroad was the third passenger railroad to be opened for travel in the United States.

The Camden and Amboy Railroad was chartered in 1830 and construction was commenced in 1831. Its total length was sixty-one miles, thirty-four of which, between Bordentown and South Amboy, were opened for travel in December, 1832, and the remainder, between Bordentown and Camden, in 1834. The Allegheny Portage Railroad and the Columbia Railroad, both in Pennsylvania, which have been already noticed, were other early railroads in this country. They were opened in the spring of 1834.

The first locomotive to run upon an American railroad was the *Stourbridge Lion*, which was built in England. It was first used at Honesdale, Pennsylvania, on August 8, 1829, on the coal railroad of the Delaware and Hudson Canal Company. W. Hasell Wilson says that the locomotive *John Bull*, built by Stephenson & Co., of England,

to the order of Robert L. Stevens, president of the Camden and Amboy Railroad Company, was shipped from Newcastle in June, 1831, and placed upon the Camden and Amboy Railroad in August of the same year. Mr. Wilson further says that the first passenger train on this railroad that was regularly hauled by steam power was drawn by the *John Bull* between Bordentown and South Amboy in September, 1833, the time occupied for the thirty-four miles being about three hours.

The first American locomotive that was built for actual service was the *Best Friend of Charleston*, which was built at the West Point Foundry, in New York City, for the Charleston and Hamburg Railroad in South Carolina, and was successfully used on that road in December, 1830.

Phineas Davis, of York, Pennsylvania, invented and built the first locomotive that successfully used anthracite coal. In George R. Prowell's *History of York County* he says that the Baltimore and Ohio Railroad Company offered on January 4, 1831, a prize of \$3,500 to the inventor and manufacturer of a locomotive of American manufacture that would burn coal or coke and consume its own smoke, and that Mr. Davis built in 1832 at the York Foundry and Machine Shop, of which he was half owner, a locomotive which met all these requirements. He called it *The York*. It used anthracite coal and was a great success. Others followed in the same year.



CHAPTER XVII.

EARLY RAILROADS IN PENNSYLVANIA.

PENNSYLVANIA is the foremost State in the Union in the attention it has given to the building of railroads, and all things considered it is also the foremost in the results that have been attained. It is exceeded in railroad mileage by only two States, Illinois and Texas, but each of these States has a much greater area in square miles than Pennsylvania, each of them has fewer miles of double track than Pennsylvania, and in each of them, both prairie States, railroad construction has been very much less difficult from an engineering standpoint, and therefore less expensive, than in Pennsylvania. The following table shows the length of steam railroads which had been built in the three States named at the close of 1907. It also shows the area in square miles of each of the States mentioned, exact figures having been furnished for this chapter by the Government geographer, Henry Gannett.

States.	Miles of Railroad Built.	Area in Square Miles.
Texas	12,877.27	265,896
Illinois	12,201.73	56,665
Pennsylvania	11,309.31	45,126

The States which approach nearest to Pennsylvania in railroad mileage are Iowa, with 9,889.12 miles; Ohio, with 9,284.95 miles; Kansas, with 8,907.98 miles; Michigan, with 8,610.75 miles; and New York, with 8,371.63 miles. With the exception of Ohio each of these States has a larger area in square miles than Pennsylvania, and all of them are less mountainous, only New York approaching it in this physical characteristic. Nor have gifts of public lands helped Pennsylvania to build its railroads. If we consider also the enterprise of Pennsylvania in extending its railroad connections to other States its pre-eminence as a railroad State becomes even more manifest.

Pennsylvania is gridironed with railroads. A map of the State will show railroads radiating from its commercial centres in every direction—roads running east and west, north and south, northeast and northwest, southeast and southwest, penetrating every one of the sixty-seven counties in the State except Fulton county, which will soon have its first railroad. A volume would be required to give even a brief history of all these roads. Only a few facts relating to the early and the leading railroads of Pennsylvania will be presented in this chapter.

In the preceding chapter mention has been made of two short pioneer railroads in Pennsylvania—one in Delaware county, built in 1809, and the other in Armstrong county, built in 1818, the first, about a mile long, to haul stone from a quarry, and the other, also a short road, to haul the raw materials for a blast furnace. These were unimportant enterprises. Both roads had wooden rails.

The first railroad in Pennsylvania of real importance was the Mauch Chunk Railroad, in Carbon county, nine miles long, with four miles of sidings, built in 1827 to connect the coal mines of the Lehigh Coal and Navigation Company with the Lehigh river. Solomon W. Roberts says of this road: "It was laid mostly on the turnpike, and the wooden rails were strapped with common merchant bar iron. The holes for the spikes were drilled by hand." The next railroad in Pennsylvania was the Carbondale and Honesdale Railroad, commenced in 1826 and completed in 1829, built by the Delaware and Hudson Canal Company to connect the company's coal mines at Carbondale with its canal at Honesdale. It was sixteen and a quarter miles long. Its wooden rails were strapped with iron bars. Both railroads were coal roads. Neither of these roads was intended to haul general freight or to carry passengers.

In the decade beginning with 1830 a great impetus was given to the building of railroads in Pennsylvania. Several companies were incorporated in that year to build these roads, including the Philadelphia, Germantown, and Norristown Railroad, of which five miles were completed in 1832. Other railroad companies were incorporated in

1832 and 1833, including the Philadelphia and Reading Railroad Company, the Philadelphia and Trenton Railroad Company, and the Harrisburg, Portsmouth, Mount Joy, and Lancaster Railroad Company. In 1834 the Columbia Railroad and the Allegheny Portage Railroad, both State enterprises connected with the Pennsylvania Canal, were opened for business. In 1836 the following roads, built by incorporated companies, had been completed: Mauch Chunk, 9 miles; West Chester, 9 miles; Room Run, $5\frac{1}{4}$ miles; Philadelphia, Germantown, and Norristown, 21 miles; Mine Hill and Schuylkill Haven, 20 miles; Mount Carbon, 7 miles; Lykens Valley, $16\frac{1}{2}$ miles; Little Schuylkill, $21\frac{1}{2}$ miles; Schuylkill Valley, 10 miles; Mill Creek, 4 miles; Pine Grove, 4 miles; Carbondale, $16\frac{1}{4}$ miles; Philadelphia and Trenton, $26\frac{1}{4}$ miles; Beaver Meadow, $26\frac{1}{2}$ miles: total, $196\frac{1}{4}$ miles. Other railroads were in course of construction in 1836, including the Philadelphia and Reading, the Philadelphia and Wilmington, the Harrisburg and Chambersburg, the Williamsport and Elmira, and the Harrisburg, Portsmouth, Mount Joy, and Lancaster.

From a history of the Philadelphia and Reading Railroad—now the Philadelphia and Reading Railway—by Charles E. Smith, once its president, we take the following interesting details of the early history of this road, which was the first of all the existing great railroad enterprises in Pennsylvania.

“The Philadelphia and Reading Railroad Company was chartered on April 4, 1833, ‘to build a road from the borough of Reading to a point in or near Philadelphia (58 miles), or on the line of the Philadelphia and Columbia Railroad (now the Pennsylvania Railroad), or of the Philadelphia and Norristown Railroad (41 miles).’ The company was organized in 1834, Elihu Chauncey being elected president and Moncure Robinson appointed chief engineer. The board wished to build the road from Reading to Norristown, 41 miles, as the cheapest plan, and use the Norristown Railroad thence to Philadelphia, 17 miles. Mr. Robinson opposed this vigorously. . . . His idea was finally adopted, by building the road to Belmont and using the Columbia Railroad, then belonging to the State

of Pennsylvania, for three and a half miles into Philadelphia, for its passengers and general merchandise, while at the same time building a branch from the Falls of Schuylkill for five and a half miles to Port Richmond on the Delaware river, for coal intended for shipment coastwise.

"The original charter of the company gave the right to build a railroad only from Philadelphia to Reading, 58 miles, while the total distance to Pottsville and the coal region is 93 miles. The Little Schuylkill Navigation, Railroad, and Coal Company was chartered in 1826 to build a canal or railroad from Tamaqua to the Schuylkill Canal at Port Clinton, a distance of 20 miles, and by a supplement to its charter, passed in 1829, it was authorized to extend its railroad to Reading, 20 miles farther. This privilege it agreed to relinquish to the Reading. This arrangement was subsequently authorized and approved by an act of the Legislature in 1837, thus extending the right of the Reading to build to Port Clinton, 78 miles from Philadelphia. In March, 1838, the company was authorized to extend its road to Mount Carbon, 14 miles farther, making 92 miles from Philadelphia. The remaining mile needed to reach Pottsville was obtained by the merger and consolidation of the Mount Carbon Railroad Company, April 10, 1872.

"On January 13, 1842, the road was finished and a single track opened to Mount Carbon, one mile below Pottsville. On May 17, 1842, the branch from the Falls of Schuylkill to the coal wharves at Port Richmond was opened and the coal traffic was begun in earnest." In 1844 the second track of the road was laid.

Mr. Smith continues: "In June, 1851, that portion of the road, some three and a half miles, lying between Belmont and Broad and Vine streets, Philadelphia, belonging to the State of Pennsylvania, and hitherto used by the Reading for its passenger and merchandise traffic, was purchased from the State, giving the company access to the city on its own rails. In 1858 the Lebanon Valley Railroad, from Reading to Harrisburg, fifty-four miles, was completed and merged with the Reading. In July, 1869, Franklin B. Gowen was chosen president of the

Reading on the resignation of Charles E. Smith. The company then began to purchase coal lands and soon after to mine coal."

The circumstances attending the purchase by the Philadelphia and Reading Railroad Company in 1851 of that part of the Philadelphia and Columbia Railroad extending from Philadelphia to the inclined plane at Belmont are given in detail in an official report of the company, as follows: "From the depot at Broad and Vine streets the road ran out Pennsylvania avenue and across the Columbia bridge, from the western end of which an inclined plane, with stationary engine, was used to overcome the ascent from the bank of the Schuylkill to the ridge of hills beyond. On October 15, 1850, the inclined plane was abandoned, and that portion of the road extending from the foot of the plane to Broad street was purchased from the State by the Philadelphia and Reading Railroad Company. . . . Thus it was that the latter obtained its first entrance to Philadelphia proper, and the fact is adverted to here, showing how an important section of the old State Road became the property of the Reading Railroad, while the remainder of that historic line passed to the Pennsylvania Railroad by purchase seven years later." The price paid by the Philadelphia and Reading Railroad Company for the property it purchased from the State was \$243,200. The State abandoned the use of the Belmont plane and its approaches in 1850 because it had built a short line from West Philadelphia to a point on the Philadelphia and Columbia Railroad near the present town of Ardmore, which avoided the inclined plane.

The official report of the engineers of the Philadelphia and Reading Railroad Company, dated September 19, 1838, states that the first part of the Reading Railroad to be completed extended from Reading to Norristown, and that it was opened for the conveyance of passengers on July 16, 1838. The engineers' report, dated December 10, 1839, states that the railroad between Philadelphia and Reading was opened for business on December 5, 1839, and that on that date the company's engine,

the *Gowan & Marx*, drew the first train between the points named, leaving Reading with 80 cars, conveying 1,635 barrels of flour, $73\frac{1}{4}$ tons of blooms, 6 tons of coal, "2 hhds. of whisky and other articles," and 60 persons. The total weight of the train, exclusive of engine and tender, was 368 tons.

The foregoing details sufficiently cover the history of the Philadelphia and Reading Railroad in its early days. To-day the Reading system is one of the most comprehensive railroad systems in the country. Starting at Philadelphia it first reaches out for the anthracite coal trade and other trade of Northeastern Pennsylvania and then extends its lines into New Jersey, with New York City connections, and with connections to Buffalo and other points in the State of New York and west of Buffalo. In 1907 it owned or controlled 2,136.88 miles of main track. Among the important lines which it controls is the Central Railroad of New Jersey, which gives it New York City connections, and which embraces 648.44 miles of main track. It also owns other railroad lines in New Jersey.

The Pennsylvania Railroad Company was chartered on April 13, 1846, to build a railroad from Harrisburg to Pittsburgh, with branches to Erie, Blairsville, Uniontown, and other places, and with a capital of \$7,500,000. It is a coincidence that this company was chartered to build a railroad from Harrisburg westward and not from Philadelphia, and that it was originally planned to build the Pennsylvania Canal westward from the vicinity of Harrisburg and not from Philadelphia, although both enterprises were intended to connect Philadelphia with Pittsburgh. As originally planned, however, these connections were to be made by means of transportation facilities already established—the Pennsylvania Canal to connect with the Union Canal and the improved navigation of the Schuylkill river and the Pennsylvania Railroad to connect with the Harrisburg, Portsmouth, Mount Joy, and Lancaster Railroad and the Philadelphia and Columbia Railroad. The construction of the Pennsylvania Railroad was commenced in July, 1847, so that the road is to-day only about sixty years old. The workmen employed in build-

ing the road were chiefly Irish, and their daily wages seldom exceeded seventy-five cents.

On September 16, 1850, the Pennsylvania Railroad was completed from Harrisburg to Duncansville, a distance of 137 miles, at which latter place it connected with the Allegheny Portage Railroad, whose tracks were used in crossing the Allegheny mountains to a point a few miles east of Johnstown, from which point westward its own tracks were again used. The road was opened to Pittsburgh on December 10, 1852, about five and a half years after its construction was undertaken. The mountain division of the road, from Altoona to the Portage viaduct, including the celebrated horseshoe bend and the long tunnel at Gallitzin, was completed on February 15, 1854, this division avoiding the use of inclined planes, although the grades were heavy. Like the Portage Railroad itself the building of this division of the Pennsylvania Railroad was a remarkable feat of engineering skill.

On April 21, 1849, the Pennsylvania Railroad Company leased the Harrisburg, Portsmouth, Mount Joy, and Lancaster Railroad, 34.49 miles long, for twenty years, and on December 29, 1860, this lease was continued for 999 years. This road was one of the earliest railroads in Pennsylvania. It was chartered on June 9, 1832, and was opened for business in 1838. With the lease of this road and the purchase in 1857 of the State railroads above mentioned and described in a previous chapter the Pennsylvania Railroad Company obtained control of an unbroken line of railroad from Philadelphia to Pittsburgh, now styled the main line of the Pennsylvania Railroad.

The Sunbury and Erie Railroad, 289.67 miles long, from Sunbury to Erie, with many important connections to-day, was leased by the Pennsylvania Railroad Company for 999 years from January 1, 1862. A controlling interest in the Philadelphia, Wilmington, and Baltimore Railroad was acquired in 1881. The Northern Central Railway, extending 460.39 miles, including branches and connections, from Baltimore through Pennsylvania to Lake Ontario, New York; the Cumberland Valley Railroad, extending from Harrisburg to Powell's Bend, on the Poto-

mac river, in Maryland; the Allegheny Valley Railway, from Pittsburgh to Oil City, with branches and connections to Buffalo and other points; the West Penn division, extending from Bolivar to Allegheny; and the Schuylkill division, extending from Philadelphia to Pottsville—all these are important branches of the Pennsylvania system which mainly lie in Pennsylvania and which are either owned or controlled by the Pennsylvania Railroad Company. Other branches might also be mentioned.

The Pennsylvania system extends into many States, its most important subsidiary interest west of Pittsburgh being the Pennsylvania Company, which operates the Pittsburgh, Fort Wayne, and Chicago Railway. It owns a controlling interest in other important railroad lines in States west of Pennsylvania, including the "Panhandle" and Vandalia lines; it is the lessee of the United Railroads of New Jersey, giving it access to New York City; it controls railroads to Atlantic City, Cape May, and other seaside resorts; and it has important Southern connections.

In 1907 the Pennsylvania system owned and operated or controlled the operation of 11,175.74 miles of main track, (including a few miles of ferries and canals,) of which total 6,078.17 miles are east of Pittsburgh and Erie and 5,097.57 miles are west of these cities.

In 1907 the Lehigh Valley Railroad Company owned 304.60 miles of main track in Pennsylvania and operated in all 1,440.22 miles, extending from Jersey City to Phillipsburg, New Jersey, thence to Wilkesbarre, Pennsylvania, and thence to Buffalo, New York, with branches. This road was originally a consolidation of several short anthracite coal roads. The Lehigh Valley Railroad not only penetrates a rich part of Northern Pennsylvania but it is a most important agent in carrying to market the product of the anthracite coal mines of the State. It is the third of the great railroad systems of Pennsylvania.

A historical fact that should not be overlooked is the opposition to the building of railroads which was sometimes encountered in Pennsylvania. Many of the farmers along the line of the Columbia Railroad were opposed to its construction because they believed that it would in-

terfere with the sale of horses, oats, and other farm products which were needed in the operation of the Lancaster Turnpike, and which also gave employment to many of them as wagoners. For similar reasons farmers were opposed to the building of the Harrisburg, Portsmouth, Mount Joy, and Lancaster Railroad. When the project of building a railroad from Harrisburg to Reading through the Lebanon valley was proposed many of the farmers of the valley opposed it for the reason that it would seriously check the demand for their horses and the grain to feed them and also interfere with their business as wagoners. They also objected to the building of the road because the counties through which it passed would be called upon to furnish financial aid, and for this reason they feared that their taxes would be increased. So it happened that the Lebanon Valley Railroad, the building of which was authorized by an act of the Legislature on April 1, 1836, was actually not undertaken until 1853, a lapse of seventeen years. It was finished in 1858, on January 18 of which year the whole road was opened.

Pennsylvania may well be proud of its great railroad systems. They have contributed greatly to the development of its natural resources and to the upbuilding of all its productive industries. They and all other Pennsylvania railroads well deserve the continued good will of all Pennsylvanians. Recent legislation directly affecting the railroads of this State has been conspicuously unappreciative and most ungracious in view of the great benefits which these railroads have conferred upon all our people.



CHAPTER XVIII.

THE GREAT INDUSTRIES OF PENNSYLVANIA.

WE now come to the consideration of the great industries of Pennsylvania which have made its name famous in every civilized country. A general survey of these industries will be given in this chapter in the light of recent authentic statistics. Historical details of leading Pennsylvania industries will be given in other chapters.

Pennsylvania has long been noted as the leader of all the States in the mining of coal, the manufacture of coke, and the production of iron and steel. Its leadership in these great industries in 1905 is shown in the following table, which gives its percentage of the total production of coal and coke and of leading forms of iron and steel in the whole country in that year of industrial activity.

Production of Coal, Coke, Iron Ore, and Iron and Steel in 1905.	Production in United States.	Production in Penn- sylvania.	Pennsyl- vania's per- centage.
Coal, all kinds..... gross tons.	350,645,210	175,065,613	49.9
Coke net tons..	32,231,129	20,573,736	63.8
Iron ore..... gross tons.	42,526,133	808,717	1.9
Pig iron..... gross tons.	22,992,380	10,579,127	46.0
Steel ingots, castings, etc. . gross tons.	20,023,947	11,040,423	55.1
All kinds of rails gross tons.	3,375,929	1,115,841	33.0
Other rolled iron and steel. gross tons.	13,464,086	7,802,449	57.9

Contrary to common belief Pennsylvania has not been a large producer of iron ore since the ores of the Lake Superior region came into general use about 1880 in the manufacture of Bessemer pig iron. Its small production in 1905 is included in the table. And yet Pennsylvania was first of all the States in the mining of iron ore down to the census year 1880, when it produced 1,951,496 gross tons. In the census year 1870 it produced 978,113 tons, or over 32 per cent. of the total production of the country in that year. In 1889 it fell to the third place, in 1904 to the ninth place, and in 1905 it occupied

the sixth place among the iron-ore producing States. In 1906 it occupied the fifth place. Its production of iron ore in 1905 was 808,717 tons and in 1906 it was 949,429 tons. In 1904 its percentage of the total production was 1.4, in 1905 it was 1.9, and in 1906 it was 1.99.

It is not necessary to comment on the prominence of Pennsylvania as a producer of iron and steel except to call attention to its extraordinary percentages of the total production in 1905 as they are shown in the table—pig iron, 46.0 per cent.; all kinds of steel, 55.1 per cent.; all kinds of rails, 33.0 per cent.; all other forms of rolled iron and steel, 57.9 per cent. Of the production of coal in Pennsylvania in 1905 69,339,152 gross tons were anthracite and 105,726,461 tons were bituminous; the total was 175,065,613 tons, or 49.9 per cent. of the country's production. Of the total production of coke in the same year 63.8 per cent. was made in Pennsylvania. In 1906 the whole country produced 369,783,284 gross tons of coal, of which Pennsylvania produced 179,085,372 tons, or 48.4 per cent. In 1906 the country's total production of coke was 36,401,217 net tons, of which Pennsylvania produced 23,060,511 tons, or 63.3 per cent. Nearly all the bituminous coal and coke produced in Pennsylvania is to be credited to Western Pennsylvania. Practically all the anthracite coal produced in the United States is mined in Eastern Pennsylvania.

The statistics of another leading industry of Pennsylvania, the silk industry, for the census year 1900 and the census year 1904 will surprise the average reader. In both years Pennsylvania occupied the second place among the States in the manufacture of silk products, New Jersey being first in rank. Pennsylvania made great progress in the development of this industry in the decade between 1890 and 1900 and also from 1900 to 1904. In the census year 1904, which was virtually the calendar year, all the States had \$109,556,621 invested in the manufacture of silk and employed 79,601 persons as wage earners, exclusive of clerks, etc., paying the wage earners \$26,767,943 in wages. In the same year the silk industry of Pennsylvania had \$31,312,386 of capital invested and employed

26,915 wage earners, who were paid \$6,972,852. In the census year 1900 Pennsylvania had 121 establishments engaged exclusively in the manufacture of silk, and in the census year 1904 it had 168 establishments. Since 1904 Pennsylvania has made still further progress in the silk industry, which has been extended into many counties. It is one of its new industries and it illustrates the wonderfully varied character of its manufacturing enterprises. This industry and some others have been overshadowed in the industrial statistics of Pennsylvania by the greater prominence of its coal and coke and iron and steel industries, but, as will be seen from the figures given, it deserves wider recognition than it has received. To-day Pennsylvania is probably the first among the silk-manufacturing States. While the value of the silk products of New Jersey increased from \$39,966,662 in the census year 1900 to \$42,862,907 in the census year 1904, the value of the silk products of Pennsylvania increased in the same period from \$31,072,926 to \$39,333,520. The silk industry had scarcely a beginning in Pennsylvania until after 1880, although it existed in a small way at Economy, in Beaver county, the home of the Harmony Society, as early as 1828.

In the census year 1890 Pennsylvania ranked first in the aggregate production of woolen and worsted goods, carpets and rugs other than rag, and other woolen products, all grouped in census statistics as "wool manufacture, all branches." These products were valued in Pennsylvania in 1890 at \$72,393,182, against \$67,599,321, the value of the same products in Massachusetts in the same year. In the census year 1900 the position of these two leading States was reversed, the products of Massachusetts being valued at \$81,041,537 and those of Pennsylvania at \$71,878,503. In the manufacture of carpets and rugs other than rag Pennsylvania has long been first of all the States, Philadelphia and its suburbs being noted as the principal seat of this industry in the United States and as the leading carpet centre of all countries. In the census year 1900 Pennsylvania employed over three-eighths of the capital invested in the whole country in the manufacture of these special products and produced nearly

one-half of their total value. The total value of the carpets and rugs that were made in Pennsylvania in that year was \$23,113,058.

In the manufacture of cotton goods Pennsylvania is less prominent than in the manufacture of the other textile products previously enumerated. About sixty years ago the city of Allegheny, adjoining Pittsburgh, had six factories for the manufacture of some of the coarser forms of cotton goods, but these factories have long been silent or converted to other uses. The cotton was brought up the Ohio river from the lower Mississippi. In the census year 1900 Massachusetts was first in the value of cotton products, South Carolina second, North Carolina third, Rhode Island fourth, and Pennsylvania fifth, New Hampshire coming next to Pennsylvania, each State producing as follows : Massachusetts, \$111,125,175 ; South Carolina, \$29,723,919 ; North Carolina, \$28,372,798 ; Rhode Island, \$26,435,675 ; Pennsylvania, \$25,447,697 ; and New Hampshire, \$22,998,249. The production of Georgia in the same year was valued at \$18,544,910. In the total value of all textiles produced in the census year 1900 Massachusetts was first and Pennsylvania second.

Pennsylvania has always been prominent among the States as a producer of lumber. When first settled and for many years afterwards it possessed extensive forests in every direction, and large and small streams furnished then and have since furnished abundant water power for its saw mills. It owes its very name to the vastness of its forests, and it is one of the best watered States in the Union. An excellent summary of its achievements as a lumber producer was prepared in 1906 by James E. DeFebaugh, editor of the *American Lumberman*, of Chicago, and the author of a *History of the Lumber Industry of America*. From this summary we select the following details :

“From a lumber standpoint Pennsylvania is perhaps the most wonderful State in the Union. In points of maintained production and of variety of output it stands close to the head of all the States. Back as far as 1850 Pennsylvania was credited with 2,894 lumbering establishments, being exceeded in that particular only by New

York. In 1860 it had passed New York and stood at the head in number of establishments, which position it easily maintained thereafter. In the amount of capital invested Pennsylvania was the leader in 1860, although in 1900 Michigan, Minnesota, and Wisconsin exceeded it. In the value of the lumber produced Pennsylvania occupied second place in 1850, first place in 1860, second place in 1870 and 1880, third place in 1890, and fourth place in 1900. Pennsylvania's first prominence as a lumber producer rested upon white pine. The headwaters of the Allegheny and the Susquehanna floated out white pine logs and lumber by the hundreds of millions of feet, so that Pennsylvania white pine was known not only on the Atlantic seaboard but all along the course of the Ohio and the lower Mississippi as far as New Orleans. In addition the cherry was the finest that ever grew, while oak of several varieties, maple, poplar, and other woods abounded. It was not until the white pine was nearly exhausted that hemlock received much attention. The decade from 1880 to 1890 saw the rise of this wood to prominence. Since 1900 the product has probably been declining. In the census year 1900 Pennsylvania was fourth among the States in volume of production, producing 2,321,284,000 feet of lumber, of which 1,558,188,000 feet were hemlock, 221,047,000 feet white pine, 44,614,000 feet chestnut, 342,268,000 feet oak, and 49,650,000 feet maple, the other woods specifically reported being yellow pine, spruce, ash, birch, cottonwood, elm, gum, hickory, basswood, poplar, and black walnut."

Another of the great industries of Pennsylvania, and one of its oldest industries, is the manufacture of leather. Pennsylvania early gave this industry special attention, partly because it soon became the leading agricultural and cattle-raising colony and partly because there was no scarcity of oak and other trees which would yield tannic acid. In the nineteenth century the invasion of the hemlock forests in the northern and western parts of the State furnished in hemlock bark a suitable and very abundant material for tanning hides, the cattle-raising industry of the State meanwhile supplying an increasingly large num-

ber of hides. In the early part of that century the manufacture of leather, especially the heavier and coarser forms, became a great Pennsylvania industry, supplying not only its own wants for leather but furnishing large quantities of leather and leather products to other States and considerable quantities for exportation to foreign countries. Pennsylvania has never, however, approached the prominence of New England in the manufacture of boots and shoes. Because of its abundant supply of hemlock bark the tanners of Pennsylvania began in the last century to supplement the home supply of hides with hides obtained in other States and with large importations of foreign hides. It has also long been a manufacturer of morocco leather, made from imported goatskins tanned with sumac leaves. The importation of hides and skins in large quantities continues to-day. Nearly \$32,000,000 worth of goatskins were imported into the United States in the fiscal year 1906, of which British India alone sent us nearly \$11,000,000 worth. In the same year our importations of hides exceeded \$50,000,000. Even in the mountain sections of Pennsylvania South American and other imported hides are tanned into leather. It has paid to bring these hides to the hemlock bark. Many hides thus tanned are again shipped to markets outside of Pennsylvania.

The prominence of Pennsylvania as a leather producer is shown in the statistics for the census year 1900. In that year the whole country had 1,306 establishments engaged in the manufacture of leather, of which 254 were found in Pennsylvania; the capital invested in the whole country was \$173,977,421, and in Pennsylvania it was \$57,320,227; the number of wage earners, exclusive of officials, clerks, etc., in the whole country was 52,109, and in Pennsylvania it was 13,396; the wages paid to the whole number of wage earners was \$22,591,091, and to those employed in Pennsylvania it was \$5,457,518; the value of the whole country's leather products was \$204,038,127, and the value of the leather products of Pennsylvania was \$55,615,009. It will be seen that in the census year mentioned about one-third of the capital invested in the manufacture of leather in the United States was

invested in Pennsylvania, that more than one-fourth of the wage earners employed in this industry in the whole country were employed in this State, and that of the total value of the leather manufactured Pennsylvania's share was much more than one-fourth. The three States which come next to Pennsylvania in the manufacture of leather are Massachusetts, New York, and Wisconsin, in the order mentioned, but in the value of leather produced in the census year 1900 each of the above mentioned States fell more than fifty per cent. below the figures for Pennsylvania. Pennsylvania is not only the leading leather-producing State but it is in no danger of losing that distinction. The growing scarcity of hemlock bark is being met by the substitution of a new form of tannic acid which is obtained from a tree found in South America.

Another of the leading industries of Pennsylvania is the manufacture of glass, in which it leads every other State and in which it has long been the leader. It was established long before the Revolution. In the census year 1904 the total capital invested in this industry in the whole country was \$89,389,151; the number of wage earners employed, not including officials, clerks, etc., was 63,969; and the total amount paid to wage earners was \$37,288,148. In the same year the capital invested in this industry in Pennsylvania was \$40,612,180, and the number of wage earners, exclusive of officials, etc., was 20,794, whose wages amounted to \$12,518,440. The total value of the glass produced in 1904 was \$79,607,998, of which Pennsylvania produced \$27,671,693. The plate glass industry especially has made great progress in the United States in late years, but greater progress in Pennsylvania than in all other States combined. In the census year 1900 there were 8 plate glass establishments in Pennsylvania, 3 in Indiana, 1 in Ohio, and 1 in Missouri, and in the census year 1904 there were 11 plate glass establishments in Pennsylvania, 2 in Indiana, 1 in Michigan, 2 in Missouri, and 1 in Ohio.

In the manufacture of chemicals Pennsylvania is only exceeded by New York. In the whole country the value of the chemical products in the census year 1900 was

\$62,676,730, of which New York contributed \$15,994,366 and Pennsylvania \$13,034,384. In the manufacture of paper Pennsylvania was the pioneer of all the colonies. By the census of 1900 it was fourth among the States in the aggregate value of all paper produced, but it was second in the value of some leading paper products.

The production of petroleum in this country in the calendar year 1905 was greater than in any previous year, but Pennsylvania had long lost its leadership in this industry. The total output of crude petroleum in that year was 134,717,580 barrels, which exceeded by 17,636,620 barrels the production of 117,080,960 barrels in 1904. The production of petroleum in the United States more than doubled in the six years from 1900 to 1905. A table published by the United States Geological Survey, showing the rank of the States in the production of petroleum, is full of surprises. Of the total production in 1904 California produced 25.33 per cent.; Texas, 19 per cent.; Ohio, 16.13 per cent.; West Virginia, 10.80 per cent.; Indiana, 9.69 per cent.; Pennsylvania, 9.50 per cent.; Kansas, 3.63 per cent.; and Louisiana, 2.51 per cent. Of the total production in 1905 California produced 24.81 per cent.; Texas, 20.89 per cent.; Ohio, 12.13 per cent.; Kansas, Indian Territory, and Oklahoma combined, 8.92 per cent.; West Virginia, 8.59 per cent.; Indiana, 8.14 per cent.; Pennsylvania, 7.75 per cent.; and Louisiana, 6.61 per cent. The other oil-bearing States and Territories produced only small quantities in 1904 and 1905. In the early years of the petroleum industry, beginning statistically with 1859, Pennsylvania was the only State that produced petroleum in large quantities, and until 1895, when it was passed by Ohio, it led all the States in production, but in 1905 it produced less than one-twelfth of the total production, virtually all in Western Pennsylvania.

The production of natural gas in the calendar year 1905 amounted approximately in value to \$41,562,855, which was an increase of \$3,066,095 over the value of the gas produced in 1904. The production of Pennsylvania in 1905 was valued at \$19,197,336, or over 46 per cent. of the total value, West Virginia, Ohio, and Indiana coming

next in rank in the order mentioned. The total production in 1905 was greater than that of any previous year. Pennsylvania was the first State to use natural gas in large quantities. It maintained a yearly increase in production in the nine years immediately preceding 1906, the production in 1905 being valued at more than three times that of 1897. All the natural gas that is produced in Pennsylvania is obtained in the northern and western parts of the State. It has not been found in the eastern part.

Pennsylvania is first of all the States in the production of Portland cement, which is rapidly becoming one of the country's great industries. In the calendar year 1904 Pennsylvania produced 11,496,099 barrels, while the whole country produced 26,505,881 barrels. The share of Pennsylvania was over 43 per cent. of the total production. In 1907 the whole country produced 48,785,390 barrels, of which Pennsylvania produced 20,393,965 barrels, or nearly 42 per cent. of the total production. It is first of all the States in the production of roofing slate and limestone. Pennsylvania is also first of all the States in the production of fire brick and tiles, Ohio being second. In the manufacture of pottery, however, which is also a clay product, Pennsylvania is greatly exceeded by Ohio and New Jersey and in a less degree by New York, while it is closely followed by West Virginia.

In other manufactured products Pennsylvania is pre-eminent among all the States and is even distinguished. It was the first State to establish works for the exclusive manufacture of locomotives and its Baldwin Locomotive Works are the largest in the world. It builds more railroad cars than any other State and it was the first to engage in the manufacture of steel cars, now a great national industry. Its Disston saws are of worldwide reputation. In iron and steel shipbuilding Pennsylvania has been the pioneer, and its Roach and Cramp shipyards have won for it many honors. Pennsylvania is also the only State that makes armor plate. But for the enterprise of Pennsylvania steel manufacturers this important industry would not have had an existence in our country to-day.

Agriculture, the leading industry of our country, is

also the leading industry of Pennsylvania. The value of the agricultural products of the United States is annually many times greater than the combined value of all our mineral products and all our iron and steel products, and the number of persons engaged in agricultural pursuits is greater than that of persons engaged in all our manufacturing and mechanical industries. Our corn crop is annually of far greater value than any of our manufactured products. Our cotton crop, which, by the way, still continues to be our leading export product, is of far greater value every year than all the coal we mine and coke we make. As an agricultural State Pennsylvania has long been noted for the great variety of its products. Its climate and soil permit the production in large quantities of many crops that other States either do not produce at all or produce in only small quantities. Many States exceed it in the production of wheat, corn, oats, and live stock, but it is prominent in the production of other crops and farm products. Lancaster county, Pennsylvania, is the leading tobacco-growing county in the United States, and Washington county, Pennsylvania, is the leading wool-producing county in all the States east of the Rocky mountains. The annual value of the farm products of Lancaster county is greater than that of any other county in the Union. Pennsylvania is exceeded only by New York in the value of hay and potatoes produced and it is next to Wisconsin in the production of rye. It is first in the production of buckwheat. It is second in the value of dairy products. It produces all the fruits and all the vegetables that grow anywhere north of the cotton-growing States and east of the Rocky mountains. It runs a close race with New York for leadership in the production of apples and it is first of all the cherry-producing States. It is the third State in the total value of all fruits produced, California being first and New York second.

The above references illustrate the variety and value of the agricultural products of Pennsylvania. These products would alone make it a State of great wealth, but, combined with its anthracite and bituminous coal, its coke, petroleum, lumber, and natural gas, and its long list

of manufacturing industries, it is easily the leading State in the aggregate value of its industrial products.

To sum up important particulars: Pennsylvania is to-day first of all the States in the production of iron and steel, coal and coke, and carpets and rugs, and probably first of all in the manufacture of silk. In 1900 it was second in the manufacture of woolen products and in the total value of all textile products, fourth in the production of lumber and all kinds of paper, and second in the production of chemicals. It has long been first in the production of leather and in the manufacture of glass. It has lost its early leadership in the production of petroleum, but it is first in the production of natural gas. It is first in the production of Portland cement and in the manufacture of fire brick and tiles, and it is fourth in the manufacture of pottery. It leads all the States in the production of roofing slate and limestone and in the manufacture of locomotives, railroad cars, and saws, and it is the only State that makes armor plate. It is now third in iron and steel shipbuilding, not including Government vessels, Michigan being first and Ohio second. In the annual value of many farm products it is either first or closely follows other States.

Pennsylvania is a small producer of zinc, which is found near Bethlehem. Lead was at one time produced at a mine near Phoenixville and smelted in the neighborhood. Copper also has been found and smelted in the vicinity of Phoenixville. The only nickel mine in the United States that has been profitably worked is in Lancaster county. In the first half of the nineteenth century Pennsylvania was one of the leading States in the manufacture of salt.



CHAPTER XIX.

THE EARLY IRON INDUSTRY OF PENNSYLVANIA.

THE first settlers of Pennsylvania set up small furnaces and forges soon after they had provided themselves with saw mills and grist mills. Iron ore was abundant, the forests supplied charcoal for fuel, and the streams furnished all the power that was needed. Mill seats were objects of great interest in the settlement of a new country.

In 1716 the first iron works were established in Pennsylvania. This event is described in one of Jonathan Dickinson's letters, written in 1717, and quoted by Mrs. James in her *Memorial of Thomas Potts, Junior*: "This last summer one Thomas Rutter, a smith, who lives not far from Germantown, hath removed farther up in the country and of his own strength hath set upon making iron, and we have accounts of others that are going on with iron works." Rutter's enterprise was a bloomy forge, which was probably called Pool forge. It was located on Manatawny creek and about three miles above Pottstown. Iron was made directly from the ore, as in an ancient Catalan forge. In the *Philadelphia Weekly Mercury* for November 1, 1720, Thomas Fare, a Welshman, is said to have run away from "the forge at Manatawny." He was probably a redemptioner. Another Pool forge is known to have existed farther up the stream, probably built after the first one was abandoned. This Pool forge was attacked by a small band of Shawnese Indians in 1728, who were repulsed.

Mrs. James says that Rutter was an English Quaker who was a resident of Philadelphia in 1685 and who removed in 1714 from Germantown "forty miles up the Schuylkill, in order to work the iron mines of the Manatawny region." She gives a *verbatim* copy of the original patent of William Penn to Thomas Rutter for 300 acres of land "on Manatawny creek," dated February 12, 1714-15. The following obituary notice in the *Pennsylvania Gazette*, published at Philadelphia, dated March 5 to March 13,

1729-30, ought to be conclusive proof of the priority of Thomas Rutter's enterprise: "Philadelphia, March 13. On Sunday night last died here Thomas Rutter, Senior, of a short illness. He was the first that erected an iron work in Pennsylvania." In his will he is styled a blacksmith.

In Day's *Historical Collections of Pennsylvania* mention is made of Samuel Nutt, an English Quaker, who built a forge called Coventry in the northern part of Chester county which "went into operation about the year 1720." This also was a Catalan forge. Nutt probably made iron at Coventry forge in 1718. Bishop refers to a letter written by Dickinson in July, 1718, stating that "the expectations from the iron works forty miles up Schuylkill are very great." In April, 1719, Dickinson again wrote: "Our iron promises well. What hath been sent over to England hath been greatly approved. Our smiths work up all they make, and it is as good as the best Swedish iron." Dickinson probably referred to Nutt's and Rutter's forges.

The next iron enterprise in Pennsylvania was undoubtedly Colebrookdale furnace, which was built about 1720 by a company of which Thomas Rutter was the principal member. It was located on Ironstone creek, in Colebrookdale township, Berks county, about eight miles north of Pottstown. This furnace supplied Pool forge with pig iron, and in course of time other forges, one of which was Pine forge, built on the Manatawny about 1740. A stove-plate cast at this furnace in 1763 was exhibited at the Philadelphia Exhibition of 1876. In 1731 pig iron sold at Colebrookdale furnace "in large quantities" at £5 10s. per ton, Pennsylvania currency, a pound being equal to \$2.66. Soon after Nutt had built Coventry forge he built a furnace on French creek, called "Redding," about 1720. It is probable that this was the second furnace in the State.

Durham furnace, on Durham creek, about one and a half miles above its entrance into the Delaware river in the extreme northern part of Bucks county, was built in 1727 by a company of fourteen persons. At the Philadelphia Exhibition the keystone of Durham furnace, bearing date 1727, was an interesting feature.

In 1728 there were four furnaces in blast in Pennsyl-

vania, one of which was certainly Colebrookdale ; another was Durham. The other furnaces were probably Sir William Keith's, on Christiana creek, in the present State of Delaware, and Nutt's Reading furnace, on French creek. In November, 1728, James Logan shipped three tons of Durham pig iron to England. In 1728-9 Pennsylvania sent 274 tons of pig iron to the mother country. Other furnaces and forges in Eastern Pennsylvania followed in rapid succession those already mentioned. As has been stated the early forges made iron directly from the ore, but after furnaces were built pig iron was generally used at the forges. The furnaces were required to produce both pig iron and castings, the latter consisting of stoves, pots, kettles, andirons, smoothing-irons, clock-weights, and similar articles. In his *History of New Sweden* Israel Acrelius, who lived in this country from 1750 to 1756, says : "Pennsylvania in regard to its iron works is the most advanced of all the American colonies." About 1750 the manufacture of cemented steel was commenced in Chester county.

Bishop says that in 1786 there were seventeen furnaces, forges, and slitting-mills within thirty-nine miles of Lancaster. About 1789 there were fourteen furnaces and thirty-four forges in operation in Pennsylvania, according to a list published by Mrs. James. In 1791 the number of furnaces had increased to sixteen and of forges to thirty-seven. In 1796 the slitting and rolling mills were said to roll 1,500 tons per annum. At this time there were many furnaces and forges in the Schuylkill valley. The counties on the west side of the Susquehanna river contained many active iron enterprises soon after the close of the Revolution, some of which had been established before the struggle for independence began. In 1838 there were 102 furnaces, forges, and rolling mills in existence within a radius of fifty-two miles of Lancaster.

Martic forge, on Pequea creek, near the present village of Colemanville, in Lancaster county, was built in 1755 and was last in operation in 1883. During the Revolution round iron was drawn under the hammer at this forge and bored out for musket barrels at a boring mill, in a very retired spot, on a small stream far off from any public

road, doubtless with a view to prevent discovery by the enemy. The Continental Congress established and maintained an armory at Carlisle, where muskets, swords, and "wrought iron cannon of great strength" were manufactured. In 1776, and throughout the war, anthracite coal was taken in arks from the Wyoming mines above Wilkesbarre down the Susquehanna to the Carlisle armory. During the Revolution cannon and cannon balls were cast at many Pennsylvania furnaces. In his biographical sketch of David Rittenhouse in *Harper's Magazine* for May, 1882, Samuel W. Pennypacker says that at the beginning of the Revolution the leaden weights which were attached to Rittenhouse's clocks "were now needed for bullets," and it was ordered by the Pennsylvania Committee of Safety that Rittenhouse and Owen Biddle, both of Philadelphia, "should prepare moulds for the casting of clock-weights and send them to some iron furnace and order a sufficient number to be immediately made for the purpose of exchanging them with the inhabitants of this city for their leaden clock-weights."

The bar iron and castings made in the Schuylkill valley during the eighteenth century were taken down the river to Philadelphia in boats, which were poled back to their starting points. These were doubtless Durham boats, so called because they were first used in carrying iron from Durham furnace by way of the Delaware river to Philadelphia.

The first blast furnace in the Juniata valley was Bedford furnace, on Black Log creek, built in 1787 or 1788 on the site of the present town of Orbisonia, in Huntingdon county, by the Bedford Company, composed of Edward Ridgely, Thomas Cromwell, and George Ashman. It made from eight to ten tons of pig iron a week. Lytle, in his *History of Huntingdon County*, says that it was built mostly of wood and was five feet wide at the bosh and either fifteen or seventeen feet high. A forge was subsequently built on Little Aughwick creek, four miles southwest of the furnace, by the same company, which supplied the neighborhood with horseshoe iron, wagon tire, harrow teeth, etc. Large stoves and other utensils were

cast at Bedford furnace. At the Philadelphia Exhibition there was a stove-plate which was cast at this furnace in 1792. On September 10, 1793, Thomas Cromwell, for the company, advertised in the *Pittsburgh Gazette* castings and bar iron for sale at Bedford furnace. The first American-made bar iron ever taken to Pittsburgh is said to have been made at Bedford forge. "In the forge the pig iron of the furnace was hammered out into bars about six or eight feet long, and these were bent into the shape of the letter U and turned over the backs of horses and thus transported over the Alleghenies to Pittsburgh," the first part of the way by bridle paths.

Bedford furnace was certainly in operation before 1790, as on the 2d day of March of that year Hugh Needy entered into an agreement with the company to deliver twenty-eight ten-gallon kettles and seven Dutch ovens, the whole weighing 12 cwt., 3 qrs., and 21 lbs., to Daniel Depue, "on or near the Monongahela river, near Devor's ferry, in eight days ensuing the date hereof." Devore's ferry was on the Monongahela river where Monongahela City is situated. It was probably established as early as 1770. The articles which are above mentioned were carried on pack-horses. The forge appears to have been built in 1791, as is shown by an itemized account of iron made by the company from "the time the forge started" in that year until October 12, 1796, the product in these six years being 497 tons, 8 cwt., 2 qrs., and 26 lbs.

Bar iron and castings from Bedford furnace and other iron works in the Juniata valley were taken down the Juniata river in arks, many of them descending to as low a point as Middletown, on the Susquehanna, whence the iron was hauled to Philadelphia. Much of the iron of the Juniata valley was also sent to Baltimore in arks down the Susquehanna river.

Centre furnace, located on Spring creek, in Centre county, was the second furnace erected in the Juniata valley or near its boundaries. It was built in the summer of 1791 by Colonel John Patton and Colonel Samuel Miles, both Revolutionary officers. The first forge in Centre county was Rock forge, on Spring creek, built in 1793 by

General Philip Benner, who subsequently established other iron enterprises in Centre county.

In 1832 there were in operation in Huntingdon county, which then embraced a part of Blair county, eight furnaces, ten forges, and one rolling and slitting mill. Each of the furnaces yielded from 1,200 to 1,600 tons of iron annually. In the same year an incomplete list enumerated eight furnaces and as many forges in Centre county. In 1850 there were in these two counties and in Blair county (formed out of Huntingdon and Bedford in 1846) and Mifflin county forty-eight furnaces, forty-two forges, and eight rolling mills.

Much of the iron made in the Juniata valley during the palmy days of its iron industry was sold at Pittsburgh, first in the form of castings, afterwards in both pigs and bars, and finally chiefly in the form of blooms. Before the completion of the Pennsylvania Canal and the Portage Railroad bar iron from Centre county was at first carried on the backs of horses to the Clarion river and was then floated on flatboats and arks to Pittsburgh. Pig iron and bar iron from Huntingdon county were hauled over the Frankstown Road to Johnstown and floated to Pittsburgh by way of the Conemaugh river. Subsequently blooms were hauled to Pittsburgh from Huntingdon county by wagon. "Dorsey's iron from Barree forge" was for sale at Pittsburgh in October, 1805, by Thomas Cromwell. In April, 1807, at Pittsburgh, E. Denny advertised "barr iron for sale, from Huntingdon and Centre counties, at a reduced price." Juniata iron was long noted throughout the country for its excellence.

Before the Pennsylvania Canal was completed in 1834 the hauling of Juniata blooms to Pittsburgh had been for some years an important business. In the Blairsville *Record* for January 31, 1828, Mulhollan & McAnulty advertise for teams to haul blooms from the Sligo iron works, in Huntingdon county, to Blairsville, offering \$15 per ton. This hauling was done over the Huntingdon, or Northern, Turnpike, which had been built only a few years before and which passed through Huntingdon, Hollidaysburg, Ebensburg, and Blairsville to Pittsburgh. Soon after the

canal was finished and the Portage Railroad from Hollidaysburg to Johnstown was completed, the latter in 1834, the shipment of Juniata blooms to Pittsburgh greatly increased. The canal was finished to Blairsville in 1829.

Cemented steel was made at Caledonia, near Bedford, a few years before the close of the eighteenth century, by William McDermott, a native of Scotland. His daughter Josephine was married in 1820 to David R. Porter, afterwards Governor of Pennsylvania for two terms.

The first iron manufactured in Pennsylvania west of the Alleghenies was made in Fayette county by John Hayden early in 1790 "in a smith's fire." "It was about as big as a harrow-tooth." The first furnace in Western Pennsylvania was, however, built by Turnbull & Marmie, of Philadelphia, on Jacob's creek, between Fayette and Westmoreland counties, on the Fayette county side of the creek, a few miles above its entrance into the Youghiogheny river. It was first blown in on November 1, 1790, and produced a superior quality of metal both for castings and bar iron, some of it having been tried the same day in a forge which the proprietors had erected at the same place. The furnace and forge were called the Alliance iron works. Craig, in his *History of Pittsburgh*, gives an extract from a letter written by Major Craig, deputy quartermaster general and military storekeeper at Fort Pitt, to General Knox, dated January 12, 1792, as follows: "As there is no six-pound shot here I have taken the liberty to engage four hundred at Turnbull & Marmie's furnace, which is now in blast."

Union furnace, at Dunbar, on Dunbar creek, four miles south of Connellsville, in Fayette county, was built by Isaac Meason in 1790 and put in blast in March, 1791. It was succeeded in 1793 by a larger furnace of the same name, built near the same site by Isaac Meason, John Gibson, and Moses Dillon. An advertisement in the *Pittsburgh Gazette*, dated April 10, 1794, mentions that Meason, Dillon & Co. have for sale "a supply of well-assorted castings, which they will sell for cash at the reduced price of £35 per ton"—\$93.33 in Pennsylvania currency. There was a forge connected with this furnace, called Union

forge. In 1804 a large order for kettles, to be used on the sugar plantations of Louisiana, was filled at Union furnace, which was a famous furnace in its day.

In 1792 John Hayden and John Nicholson built a bloomary forge on George's creek, a few miles south of Uniontown, and in 1797 John Hayden built Fairfield furnace, also on George's creek. John and Andrew Oliphant and Nathaniel Breeding bought an interest in this furnace in 1798 and in a few years the Oliphants became its sole owners. Fairchance furnace, on George's creek, six miles south of Uniontown, was built in 1804 by John Hayden and bought by J. & A. Oliphant about 1805. It was kept in operation until 1887. The Oliphants built Sylvan forges on George's creek, below Fairfield and Fairchance furnaces. While the Oliphants operated Fairfield furnace they cast a quantity of shot which was used by General Jackson's artillery in the battle of New Orleans, on January 8, 1815.

Rolling and slitting mills, for the manufacture of sheet iron and nail rods, were established west of the Alleghenies after the first furnace and forge were built in 1790. Prior to 1794 Jeremiah Pears built a forge at Plumsock, in Menallen township, Fayette county, which was the forerunner of a rolling and slitting mill built by Mr. Pears at the same place before 1804. In 1805 the rolling and slitting mill and the remainder of Mr. Pears's property were sold by the sheriff. This was probably the first rolling and slitting mill west of the Alleghenies. In 1811 there were three such mills in Fayette county, one of which, on the right bank of the Youghiogheny river, below Connellsville, was built by John Gibson in 1805. Another was on Cheat river, just over the Pennsylvania line in the present State of West Virginia, on the road from Uniontown to Morgantown. It was owned by Jackson & Updegraff. This enterprise embraced a furnace, forge, rolling mill, slitting mill, and nail factory.

All the rolling and slitting mills of that day and of many preceding days neither puddled pig iron nor rolled bar iron, but rolled only sheet iron and nail plates from blooms hammered under a tilt-hammer. Plain rolls were used. The nail plates were slit into nail rods by a series

of revolving disks. The sheet iron was used for various purposes, including the making of salt pans.

In 1805 there were five furnaces and six forges in Fayette county. In 1811 the county had ten furnaces, one air furnace, eight forges, three rolling and slitting mills, one steel furnace, and five trip-hammers. At a later date there were twenty furnaces in this county. For many years Pittsburgh and the Ohio and Mississippi valleys were largely supplied by it with all kinds of castings and with hammered bar iron. In 1849 only four of its furnaces were in blast. Connellsville was a prominent shipping point for Fayette county iron.

The steel furnace above referred to as existing in 1811 was at Bridgeport, adjoining Brownsville, was owned by Truman & Co., and made cemented steel. It was known as the Brownsville steel factory. In 1811 Truman & Co. advertised that they had for sale "several tons of steel of their own converting, which they will sell at the factory for cash, at 12 dollars per cwt."

The first nail factory west of the Alleghenies was built at Brownsville, about 1795, by Jacob Bowman, at which wrought nails were made by hand in one shop and cut nails were made by machines in another.

The first rolling mill erected in the United States to puddle iron and roll iron bars was built in 1816 and 1817 on Redstone creek, about midway between Connellsville and Brownsville, at a place called Middletown, but better known as Plumsock, in Fayette county, on the site of Jeremiah Pears's enterprise which has previously been mentioned. The rolling mill was undertaken by Isaac Meason, owner of Union furnace, who then had forges at Plumsock. This mill was built "for making bars of all sizes and hoops for cutting into nails." F. H. Oliphant says that "the iron was refined by blast and then puddled. It was kept in operation up to 1824, the latter part of the time by Mr. Palmer." Isaac Meason, who did so much to develop the iron resources of Fayette county, was a native of Virginia. He died in 1819.

In the manufacture of iron Westmoreland county speedily followed Fayette county. Westmoreland furnace,

on a branch of Loyalhanna creek, near Laughlinstown, in Ligonier valley, was built in 1794 by Christopher Lobingier & Brother. In 1798 the furnace was sold to John Probst, who operated it for about four years. On the 1st of August, 1795, George Anshutz, manager of Westmoreland furnace, advertised stoves and castings for sale. We have a stove-plate that was cast at Westmoreland furnace in 1800 by John Probst and is so marked in raised letters.

General Arthur St. Clair built Hermitage furnace, on Mill creek, two miles northeast of Ligonier, about 1803. It was managed for its owner by James Hamilton and made stoves and other castings. It was in blast in 1806. General St. Clair died a very poor man in 1818, aged 82 years, and was buried at Greensburg. The following advertisement appeared on November 21, 1806, in *The Farmers Register*, printed at Greensburg by John M. Snowden. It had for its caption "Hermitage Furnace in Blast," and was signed by Henry Weaver & Son and dated at Greensburg, on September 12, 1806. It read as follows: "The subscribers, being appointed agents by Gen. A. St. Clair for the sale of his castings generally, and for the borough of Greensburg exclusively, give notice that they will contract with any person or persons for the delivery of castings and stoves, for any number of tons, on good terms. Samples of the castings and stoves to be seen at their store in Greensburg any time after the 20th instant."

Several other furnaces and a few forges were built in Westmoreland county soon after the early furnaces above mentioned. One of the forges was Kingston forge, erected in 1811 on Loyalhanna creek by Alexander Johnston & Co., and going into operation in 1812. Alexander Johnston was the father of Governor William F. Johnston. He was born in Ireland in July, 1773, and died in July, 1872, aged 99 years. The owners of the early furnaces in Westmoreland county, besides supplying local wants, shipped pig iron and castings by boats or arks on the Youghioheny and other streams to Pittsburgh, some of the castings finding their way to Cincinnati and Louisville and even to New Orleans. Subsequently they shipped pig iron by canal to Pittsburgh.

Shade furnace, in Somerset county, was built in 1807 or 1808 and was the first iron enterprise in that county. It stood on Shade creek, and was built by Gerehart & Reynolds. About 1818 the furnace was sold to Richards, Earl & Co., who operated it down to about 1830. In 1820 they built a forge, called Shade, below the furnace. In 1849 it made 30 tons of bars. We have seen a stove that was cast at Shade furnace in 1818. About 1811 Joseph Vickroy and Conrad Piper built Mary Ann forge, on Stony creek, about five miles below Shade furnace. Pig iron to supply this forge was sometimes packed on horseback from Bedford county, the horses taking salt from the Conemaugh salt works and bar iron as a return load. Other furnaces and a few forges were built in Somerset county at an early day but they have all disappeared. Bar iron was shipped to Pittsburgh from Shade and Mary Ann forges by flatboat on the Stony creek and the Conemaugh river. Pig iron was also hauled to Johnstown from Shade furnace for shipment by flatboat and afterwards by canal to Pittsburgh.

About 1809 John Holliday built Cambria forge on the north bank of the Stony creek at Johnstown. About 1811 it was removed to a site on the Conemaugh at Johnstown and was abandoned about 1822. It was used to hammer bar iron out of Juniata pig iron and blooms. In 1817 Thomas Burrell, the proprietor, offered wood-cutters "fifty cents per cord for chopping two thousand cords of wood at Cambria forge, Johnstown." About 1810 the second iron enterprise at Johnstown was established by Robert Pierson. It was a small nail factory. About 200 pounds of nails, valued at \$30, were made at Johnstown in the census year 1810, doubtless by Mr. Pierson. Cambria county has been noted as an iron centre since its first furnace, Cambria, was built by George S. King and others in 1842, on Laurel run, near Johnstown. It was followed in the next six years by five other charcoal furnaces, all of which have been abandoned. The extensive works of the Cambria Steel Company, at Johnstown, were commenced in 1853 by the Cambria Iron Company.

The first iron enterprise in Indiana county was Indiana

forge, on Findley's run, near the Conemaugh, built about 1837 by Henry and John Noble, who also built Indiana furnace as early as 1840. Both the furnace and forge were running in the last-named year. A few other furnaces were soon built in this county, but all the pioneer Indiana furnaces and its solitary forge have long been abandoned.

A furnace named Mary Ann was built at an early day in Greene county. It was located on Ten-mile creek, opposite Clarksville. It was probably built about 1800. It was abandoned early in the nineteenth century. Gordon, in his *Gazetteer*, (1832,) says that "there were formerly in operation on Ten-mile creek a forge and furnace, but they have been long idle and are falling to decay."

A blast furnace was built at Beaver Falls, in Beaver county, then called Brighton, on the west side of Beaver river, in 1802, by Hoopes, Townsend & Co., and blown in in 1804. A forge was connected with it from the beginning and it was in operation in 1806. Both the furnace and the forge were in operation in 1816. The whole enterprise was abandoned about 1826. The ore used at the furnace was picked out of gravel banks in the neighborhood in very small lumps. There was another early furnace in this county, named Bassenheim, built in 1814 by Detmar Bassé, who operated it until 1818, when he sold it to Daniel Beltzhoover and others. This furnace was located on the Conoquenessing creek, about a mile west of the Butler county line. It was abandoned about 1824. In February, 1818, \$12 per ton were paid for hauling pig iron over a bad road from this furnace to Pittsburgh, 30 miles distant. Mr. Bassé's homestead, "Bassenheim," stood on the hillside near Zelienople, in Butler county. Zelienople was so named after Mr. Bassé's daughter Zelie, who became the wife of Philip Passavant and the mother of the noted philanthropist, Rev. William A. Passavant. In 1828 Robert Townsend & Co. built at Fallston, in Beaver county, a mill for the manufacture of iron wire which is still in operation. About 1852 the manufacture of rivets was added and in 1887 the manufacture of wire nails was commenced. In the meantime the Harmony Society promoted the establishment of various iron and

steel enterprises at Beaver Falls, which has been one of the leading iron and steel centres of Pennsylvania.

Prior to 1846 there were a few furnaces in the Shennango valley, all using charcoal. In 1806 the geographer Joseph Scott says that "a forge and furnace are now nearly erected" at New Castle. About 1810 there was a forge on Neshannock creek, "midway between Pearson's flour mill and Harvey's paper mill," for the manufacture of bar iron from the ore.

The first furnace in the once important ironmaking district composed of Armstrong, Butler, Clarion, Venango, and other northwestern counties was Bear Creek, in Armstrong county, built in 1818 to use coke, with steam power, and its first blast was with this fuel, but charcoal was soon substituted. The furnace was abandoned long before 1850 but was running in 1832, in which year Gordon says that it was owned by Henry Baldwin and was reputed to be the largest furnace in the United States, having made forty tons of iron in a week.

Slippery Rock furnace, in Butler county, and Clarion furnace, in Clarion county, were built in 1828. Allegheny furnace, at Kittanning, in Armstrong county, and Venango furnace, on Oil creek, in Venango county, were built in 1830. From 1830 to 1855 this section of the State produced large quantities of charcoal pig iron. In 1850 there were 11 furnaces in Armstrong county, 6 in Butler, 28 in Clarion, and 18 in Venango: 63 in all. In 1858 there were 18 in Armstrong, 6 in Butler, 27 in Clarion, and 24 in Venango: 75 in all. All were charcoal furnaces, except four coke furnaces at Brady's Bend. Many of these furnaces had, however, been abandoned at the latter date, and every one has since been abandoned. Most of them were built to supply the Pittsburgh rolling mills and foundries with pig iron. The Great Western iron works, at Brady's Bend, embracing a rolling mill and four furnaces to use coke, were built in 1840 and 1841. The furnaces were finally blown out in 1873 and the rolling mill was abandoned in the same year. It was built to roll bar iron but it afterwards rolled iron rails.

Erie charcoal furnace, at Erie, was built in 1842 and

abandoned in 1849. It used bog ore. Liberty furnace, on the north side of French creek, in Crawford county, was built in 1842 and abandoned in 1849.

The iron manufactured in the Allegheny valley was taken down the Allegheny river to Pittsburgh on keel boats, arks, and rafts, the business of transporting it by water being very extensive down to about 1855. Cornplanter Indians, from Warren county, were among the raftsmen of those days.

George Anshutz, the pioneer in the manufacture of iron in Allegheny county, was an Alsatian by birth, Alsace at the time being a part of France. He was born on November 28, 1753, and died at Pittsburgh on February 28, 1837, aged over 83 years. In 1789 he emigrated to the United States and soon afterwards located at Shady Side, in the present East End of Pittsburgh, where he built a small furnace, probably completing it in 1792. In 1794 it was abandoned. It had been expected that iron ore could be obtained in the vicinity but the neighborhood produced little else than red shale. Recourse was next had to a deposit of iron ore on Roaring run, an affluent of the Kiskiminitas, in the southeastern corner of Armstrong county, from which supplies were received in arks on the Allegheny river. Some ore was also brought by wagon from the vicinity of Fort Ligonier and Laughlinstown, in Westmoreland county. Mr. Anshutz's furnace was built on a stream called Two-mile run, on the bank of which Colonel Jonas Roup had previously at an early period erected a grist and saw mill. The enterprise was largely devoted to the casting of stoves and grates.

The first iron foundry at Pittsburgh was established in 1805 by Joseph McClurg on the northeast corner of Smithfield street and Fifth avenue. Joseph Smith and John Gormly were associated with Mr. McClurg in this enterprise. They retired, however, before 1807. The enterprise was styled the Pittsburgh Foundry. On February 12, 1806, Joseph McClurg advertised in the *Commonwealth* that "the Pittsburgh Foundry is now complete." In 1812 it supplied the Government with cannon, howitzers, shells, and balls. Commodore Perry's fleet on Lake Erie and

General Jackson's army at New Orleans received their supplies of these articles in part from this foundry. In 1813 there were two iron foundries in Pittsburgh, McClurg's and Anthony Beelen's, and one cemented steel furnace, owned by Tuper & McCowan. In the following year there were two additional foundries in Pittsburgh. Mr. Beelen's foundry was put in operation in November, 1810. Like George Anshutz he was a native of France.

There were three nail factories at Pittsburgh in 1807, Porter's, Sturgeon's, and Stewart's, "which make about 40 tons of nails yearly." In 1810 about 200 tons of cut and wrought nails were made at Pittsburgh. In the same year the manufacture of shovels, hatchets, augers, and similar articles was extensively carried on at Pittsburgh.

The first rolling mill at Pittsburgh was built by Christopher Cowan, at the corner of Penn street and Cecil's alley, in 1811 and 1812. This mill had no puddling furnaces, nor was it built to roll bar iron. It was intended to and did manufacture sheet iron, nail and spike rods, shovels, spades, chains, hatchets, hammers, etc. It embraced a rolling mill, slitting mill, and tilt-hammer, "all under the same roof."

The Union rolling mill was the second mill that was built at Pittsburgh. It was located on the north side of the Monongahela river, was built in 1819, and was accidentally blown up and permanently dismantled in 1829, the machinery being taken to Covington, Kentucky. This mill had four puddling furnaces, the first in Pittsburgh. It was also the first to roll bar iron. It was built by Baldwin, Robinson, McNickle & Beltzhoover.

Other rolling mills at Pittsburgh and in its vicinity soon followed. At Etna, on Pine creek, Belknap, Bean & Butler manufactured scythes and sickles with water power as early as 1820, but in 1824 steam power was introduced and blooms were rolled. A rolling mill on Grant's Hill was built in 1821 by William B. Hayes and David Adams, near where the court-house now stands. Water for the generation of steam at this mill had to be hauled from the Monongahela river. The Juniata iron works were built on the south side of the Allegheny river in 1824

by Dr. Peter Shoenberger. Sligo rolling mill was built on the south side of the Monongahela in 1825 by Robert T. Stewart and John Lyon. The Dowlais works, in Kensington, were built in 1825 by George Lewis and Reuben Leonard.

The condition of the iron industry of Pittsburgh at the close of the first quarter of the nineteenth century is summed up in Cramer's *Magazine Almanac* for 1826: "The manufactures of Pittsburgh, particularly in the article of iron, begin to assume a very interesting aspect. Not less than five rolling mills are now in operation, and a sixth will soon be ready, for the various manufactures of iron. Four of the mills are capable of making iron from the pig, besides rolling, slitting, and cutting into nails."

In 1829 Allegheny county had eight rolling mills, using 6,000 tons of blooms and 1,500 tons of pig iron. In the same year there were nine foundries which consumed 3,500 tons of pig iron. In 1828 the iron rolled amounted to 3,291 tons, in 1829 to 6,217 tons, and in 1830 to 9,282 tons. It is said that in 1830 one hundred steam engines were built in Pittsburgh. In 1831 there were two steel cementation furnaces at Pittsburgh. In 1836 there were nine rolling mills in operation and eighteen foundries, engine factories, and machine shops.

In 1856 there were at Pittsburgh and in Allegheny county twenty-five rolling mills and thirty-three foundries but not one blast furnace. Clinton furnace, on the south side of the Monongahela, in Pittsburgh, built in 1859 by Graff, Bennett & Co., was the first furnace built in Allegheny county after the abandonment in 1794 of George Anshutz's furnace at Shady Side. It was built to use coke made from Pittsburgh coal, but Connellsville coke was soon substituted. Clinton furnace was followed in 1861 by the two Eliza furnaces of Laughlin & Co. and soon afterwards by others, all to use Connellsville coke.

Allegheny county made cemented, or blister, steel at an early day. In 1860 Hussey, Wells & Co. established at Pittsburgh the manufacture of crucible steel on a firm basis, and in 1862 Park, Brother & Co. successfully established at Pittsburgh crucible steel works also on a firm foundation. The first Bessemer steel works in Allegheny

county were completed by Andrew Carnegie and his associates at Braddock late in 1875. The manufacture of open-hearth steel in Allegheny county, also by Mr. Carnegie and his associates, soon followed.

In 1906 there were 47 blast furnaces in Allegheny county and 67 rolling mills and steel works. In 1906, as in other preceding years, this county produced more pig iron and rolled more iron and steel than the remainder of Pennsylvania, and it rolled almost as much iron and steel as the production of Ohio, Indiana, and Illinois. In the year mentioned it made over 22 per cent. of the country's total production of pig iron, over 30 per cent. of its total production of steel, and over 29 per cent. of its total production of rolled iron and steel.

The pre-eminence of Pennsylvania as an iron and steel producing State is largely due to the extraordinary activity of the iron and steel industries of Allegheny county since about 1825. Even before this year the towns and cities in the Ohio valley were mainly supplied by Pittsburgh merchants and manufacturers with bar iron, nails, pots, kettles, plow irons, and other iron and steel wares. In the early days Pittsburgh rolling mills were mainly supplied with blooms from the Juniata valley and with pig iron from nearer localities, but large quantities of blooms were also brought to Pittsburgh from Ohio, Kentucky, and Tennessee.

The details above given of the early iron history of Pennsylvania relate almost entirely to the manufacture of iron with charcoal as fuel, no other fuel having been successfully used in American blast furnaces until about 1840, and but little use of any other fuel having been made before that time in any other branches of the American iron industry. The charcoal iron industry of Pennsylvania is now virtually dead. Nearly all of its charcoal furnaces and bloomeries and all of its primitive charcoal forges have been abandoned. In 1905 only five charcoal furnaces were left in the whole State, and not one of these was in Western Pennsylvania. In 1906 one of these furnaces was dismantled. The total production of charcoal pig iron in Pennsylvania in that year was only 2,663 tons.

CHAPTER XX.

THE MANUFACTURE OF IRON AND STEEL RAILS.

THIS country leads all other countries in the production of iron and steel. This prominence in the manufacture of these products is only in part due to the bounty of nature in providing liberal supplies of the raw materials that are needed; it is largely the result of friendly and patriotic Congressional legislation, first in adopting in 1850 and in subsequently continuing the policy of liberal grants of public lands to railroad companies, and second in more firmly establishing in 1861 the protective tariff policy, which has since been effectively maintained with but brief interruptions. Through the operation of the protective policy the home market has been largely preserved for the home producers of iron and steel, and through the operation of the land-grant system, supplemented by the homestead policy, which policy first became effective in 1862, during the civil war, thousands of miles of railroad have been built in the Western States and Territories that would not otherwise have been built. With the building of these roads and of other roads in the Eastern, Middle, and Southern States the consumption of iron and steel and of other manufactured products has been greatly enlarged, the population of all sections of the country has been rapidly increased, vast mineral resources have been discovered and developed, and the whole country has been phenomenally enriched. Thousands of new farms have been opened; our agricultural products have been many times multiplied, and both home and foreign markets for the sale of our surplus crops and of all other products of the farm, the forest, the fishery, the mine, and the factory have been quickly and cheaply reached.

Many of these railroads could not have been built if our protective tariff policy had not built up our iron-rail industry in the third quarter of the nineteenth century and our steel-rail industry in the fourth quarter. Until

we began to make our own iron rails and afterwards our own steel rails foreign manufacturers charged us excessive prices for such rails as we could afford to buy. Both of the rail industries mentioned had at the first to struggle for their very existence against active foreign competition, the early tariff duties on iron rails and afterwards on steel rails not being sufficiently protective, but in the end the control of the home market was gained, the production of rails increased enormously, and the prices of both iron and steel rails to railroad companies were greatly reduced. Before we began to make our own steel rails English manufacturers charged us more than three times as much per ton for the steel rails we bought from them as American manufacturers have since charged for millions of tons. These millions of tons of steel rails have been sold at lower prices than were previously charged for iron rails. In an argument presented to the Ways and Means Committee of the House of Representatives, at Washington, on February 3, 1880, Mr. H. V. Poor gave the price of steel rails in British ports in 1863 as 369 shillings per ton, or \$89.79. Ten years later, in 1873, the price of British steel rails in British ports was 350 shillings per ton, or \$85.15. Ten years later, in 1883, the average price of steel rails in this country was \$37.75 per ton, and since that year millions of tons of steel rails have been made and sold in this country at less than \$28 per ton, which price exactly corresponds with the amount of the duty on steel rails that was imposed in the Schenck tariff of 1870, a duty which firmly established the steel-rail industry in our country.

The resisting and wearing qualities of a steel rail being much superior to those of an iron rail it is capable of supporting a much heavier weight of cars and locomotives, a much heavier tonnage of freight, and many more passengers, and it permits trains to be moved at a greater rate of speed. The carrying capacity of our railroads has been increased many times by the use of steel rails, and the cost of operating them per ton of freight carried or per passenger has been greatly decreased. The life of a steel rail being many times greater than that of an iron rail, notwithstanding the greater service it is called upon

to perform, it can easily be seen that the cost to our railroad companies for renewals of track must be many times less than if iron rails were still used and sold even at the low price now paid for steel rails.

In ten years after we began the manufacture of steel rails in commercial quantities, which was in 1867, the charge for carrying a bushel of wheat by railroad from Chicago to New York was reduced from 44.2 cents a bushel to 20.3 cents, and it has since been further reduced to 8.47 cents. In 1860, using only iron rails, the charge for moving a ton of freight one mile on the New York Central Railroad was 2.065 cents; in 1870, after we had commenced to use steel rails, the charge was reduced to 1.884 cents; in 1880, when steel rails were in more general use, the charge was further reduced to 8.79 mills; and in 1901 it was still further reduced to 7.4 mills. In the decade from 1870 to 1880 the charge for transporting a barrel of flour from Chicago to New York by rail fell from \$1.60 to 86 cents. In 1903 the freight rate on flour over the Pennsylvania Railroad system in carload lots from Chicago to New York was 36 cents per barrel.

In *The Story of a Grain of Wheat*, by William C. Edgar, of Minneapolis, the indebtedness of the farmers of our country to the railroads is frankly acknowledged in terms that corroborate all that has been above stated. He says:

“While the agriculturists of the United States have sowed and reaped, and its millers have advanced with the progress of wheat-growing, both would have been unable to attain the strong position they now occupy in the world’s markets had it not been for the co-operation of the inland and ocean carriers. It must be admitted that the great expansion of the railways of the country and the steady reduction in freight rates, accomplished by an increase of facilities for moving the traffic economically, have been the great factors in the upbuilding of the export trade in wheat and flour. The people of no other wheat-growing nation have been favored by as low rates of freight as the Americans. The railroad of the West extended its rails into promising fields as soon as, and more often before, their freight-producing capacity was known.

"In 1871, when the true quality of spring wheat was discovered, the railroads in the United States operated 44,600 miles ; in 1897 181,000 miles were in operation. The reduction in the rate of freight per ton per mile has more than kept pace with the increase in mileage ; in 1859-60 the average rate was three cents per ton per mile ; in 1896-97 it was four-fifths of a cent. On one railway, the Chesapeake and Ohio, the average freight rate per ton per mile in 1862 was seven cents ; in 1897 it was two-fifths of a cent. From 1858 to 1862 the average all-rail rate on a bushel of wheat from Chicago to New York was $38\frac{2}{5}$ cents ; from 1863 to 1867 it was $31\frac{2}{5}$ cents ; during the next five years it fell to $27\frac{3}{10}$ cents, again declining to $21\frac{1}{5}$ cents in 1873-77 ; in 1882 the average for the preceding five years was $16\frac{7}{10}$ cents ; this was reduced during the ensuing term to $14\frac{3}{5}$ cents ; from 1888 to 1892 it was $14\frac{1}{2}$ cents ; and for the five years ending with 1897 it was $12\frac{4}{5}$ cents." Mr. Edgar's all-rail statistics end with 1897.

In the manufacture of iron rails Western Pennsylvania was prominent in the early days of American railroads. At Brady's Bend, on the Allegheny river, in Armstrong county, the Great Western iron works, including four furnaces and a rolling mill, were commenced in 1840 by the Great Western Iron Company, composed of Philander Raymond and others. The rolling mill was built in 1841 to roll bar iron but it afterwards rolled iron rails, which were at first only flat bars, with holes for spikes counter-sunk in the upper surface, and in 1846 and afterwards it rolled T rails. In 1856 it made 7,533 tons of rails. This was one of the first mills in the country to roll T rails, our first rails of this pattern having been rolled in 1844 at the Mount Savage rolling mill, in Maryland. The Brady's Bend mill continued to make rails until after the close of the civil war. In October, 1873, it ceased operations. Shipments of rails were made by way of the Allegheny river. In 1849 the Great Western Iron Company failed and the Brady's Bend Iron Company took its place. The mill and the furnaces have long been abandoned and have gone to decay. In the *Railway Age*, of Chicago, for April 3, 1903, there appeared the following interesting

reminiscence of the Brady's Bend enterprise, contributed by Mr. G. W. P. Atkinson.

"The Allegheny Valley Railway in 1865 operated only 44 miles from Pittsburgh to Kittanning. It is now part of the Pennsylvania system. At that time steamers ran up the Allegheny river from Pittsburgh to Franklin when there was water enough. There was a rail mill at Brady's Bend in 1865, with which the writer was connected, and which during the war made a great deal of railroad iron. William B. Ogden, Chicago's first mayor, was president of it and the writer had charge of its sales. If the river was not navigable for steamers we had to take the stage from the Kittanning end of the Allegheny Valley Railway to Brady's Bend, and a tough ride it was. The writer and William B. Ogden made the trip several times together. Rails were shipped by river in barges to Pittsburgh or Cincinnati. In the fall of 1865 the writer shipped 2,000 tons of rails for the Nashville and Chattanooga Railroad (which was run by the Government during the war) from the Brady's Bend mill in barges down the Allegheny and the Ohio rivers and up the Cumberland river to Nashville. It took about six weeks to reach Nashville. As one passes East Brady Station to-day on the Allegheny Valley Railway the tall stack of the rolling mill is visible on the opposite side of the river, all that is left of the once busy town of Brady's Bend, with 3,000 people." The stack referred to by Mr. Atkinson was torn down in 1903.

In 1853 the Cambria iron works were built at Johnstown, by the Cambria Iron Company, expressly to roll T rails, George S. King being the originator of the enterprise. He and Dr. Peter Shoenberger owned four charcoal furnaces and thousands of acres of mineral lands near Johnstown. Within a year the works were making iron rails. It is recorded by the Johnstown *Tribune* that on Thursday, July 27, 1854, the Cambria Iron Company "made a fair and satisfactory trial of the entire machinery of the rolling mill" and that "it worked admirably." It added that "four large T rails were rolled and pronounced perfect by competent judges." Four charcoal and four coke furnaces were connected with these works. In 1856, under

new management, the mill rolled 13,206 tons of rails, and its annual rail production was afterwards increased. For almost twenty-nine years, beginning with 1855, Daniel J. Morrell, who died in 1885, was the successful general manager of these works. In 1871, through his persistent advocacy of steel rails, their manufacture by the Bessemer process was added to that of iron rails, in which branch of the steel industry these works have ever since been prominent. The Bessemer plant made its first blow on July 10, 1871, and its first steel rail was rolled on July 12, 1871. John Fritz, the distinguished engineer, is entitled to the credit of having made the manufacture of iron rails at these works a conspicuous success, accomplished chiefly through his introduction of three-high rolls in 1857, more or less trouble having previously been experienced in the use of two-high rolls. His brother, George Fritz, also distinguished as an engineer, successfully superintended the introduction at the same works of the Bessemer process and the manufacture of Bessemer steel rails. In 1898 the works were leased to the Cambria Steel Company, which now operates them.

In an address at the seventy-fifth anniversary of the Franklin Institute, at Philadelphia, on October 4, 1899, John Fritz graphically described the first use of three-high rolls in the manufacture of iron rails at the Cambria iron works. From this account we take the following statements, which have historic value beyond their local interest—beyond even their interest for students of Pennsylvania's great iron and steel industries. Mr. Fritz said:

"The year 1857 is a memorable period in the history of the manufacture of iron. Up to this time all the rails were rolled on a two-high train, the pile being passed back over the top roll, which was a great waste of time and loss of heat. When the flanges once began to crack, which was one of the serious troubles, being all the time rolled in one direction, the difficulty was greatly aggravated. The result was that when an imperfection occurred in the flange with each pass through the rolls the trouble increased, and to such an extent that it was a common occurrence for the flange to tear off the whole length of the rail and wind

around the roll, forming what in rolling-mill parlance was called a collar, which very generally ended in breaking some part of the train and often the roll. . . . During all this time I was giving the subject much consideration and had fully made up my mind that, if a three-high mill could be made to work, the difficulty could all be overcome. I besides had made up my mind that this was the only true way to roll iron. I was now prepared to suggest the building of a three-high mill, which I did. . .

"At length the mill was completed, and on the 3d day of July, 1857, the old mill was shut down for the last time. The starting of the new mill on that day was the crucial period. There were no invitations sent out. As the heaters were opposed to the new kind of a mill we did not want them about at the start. We, however, secured one of the most reasonable of them to heat the piles for a trial. We had kept the furnace hot for several days as a blind. Everything being ready we charged six piles. About ten o'clock in the morning the first pile was drawn out of the furnace and went through the rolls without a hitch, making a perfect rail. You can judge what my feelings were as I looked upon that perfect and first rail ever made on a three-high train."

On the day after this "first rail ever made on a three-high train" was rolled the mill of the Cambria iron works was burned down. After describing that event and the rebuilding of the mill in four weeks Mr. Fritz continues: "In four weeks from that time the mill was running and made 30,000 tons of rails without a hitch or break of any kind, thus making the Cambria Iron Company a great financial success, and giving them a rail plant far in advance of any other plant in the world. This position they held, unquestioned, for both quality and quantity, until the revolutionary invention of Sir Henry Bessemer came into general use."

In 1865 the Superior Iron Company built the Superior rolling mill, at Manchester, below Allegheny City, to make iron rails. Connected with this mill were two coke furnaces, built in 1863. The company operated the works until September, 1867, when they were leased by Springer

Harbaugh. On January 1, 1870, Harbaugh, Mathias & Owens took possession as owners, and on August 1, 1874, they failed, when the manufacture of rails at these works was discontinued. The works themselves have long been abandoned. A few other iron rail mills in Western Pennsylvania, most of which were equipped for the manufacture only of mine rails and other light rails, need not be mentioned. Of these mills those which made rails of heavy sections never at any time produced any considerable tonnage. Some were mechanical failures; others were financial failures. It is a noteworthy fact that Allegheny county, with all its enterprise in the manufacture of iron and steel, did not begin to make rails of heavy sections until the Superior rolling mill was built in 1865. Iron rails are not now made anywhere in Pennsylvania, except a very few tons of light rails for lumber and mine roads.

The Bessemer process for the manufacture of steel, which gives us the steel rail, dates from 1855, in which year Henry Bessemer, of England, obtained his first patent for this process. Other patents followed in 1856, but the important invention was not perfected until 1857, in which year Robert Forester Mushet, also of England, added his essential spiegeleisen improvement. In 1856 Mr. Bessemer obtained patents in this country for his invention, but he was immediately confronted by a claim of priority of invention preferred by William Kelly, of Edyville, Kentucky, but a native of Pittsburgh, Pennsylvania, which was eventually approved by the Commissioner of Patents. Inconsequential experiments were made with Mr. Kelly's process at the Cambria iron works in 1857 and 1858, but in September, 1864, steel was successfully made by his process at experimental works which were erected at Wyandotte, Michigan, by the Kelly Pneumatic Process Company. Success, however, was attained only by the use of the Mushet improvement, the control of which for this country the company had secured. In February, 1865, the firm of Winslow, Griswold & Holley was successful at Troy, New York, in making steel by the Bessemer process with the Mushet improvement, the firm having obtained the control for this country of the Bessemer

patents but not of the indispensable Mushet improvement. In 1866 the ownership of all the above patents was consolidated, and soon afterwards the manufacture of Bessemer steel in this country in commercial quantities was commenced. At first and for many years afterwards rails only were made from Bessemer steel, and to-day nearly all the rails that are in use in this country were made of this steel. In recent years, however, we have commenced to make rails of open-hearth steel in large quantities.

Steel rails have almost entirely supplanted iron rails on American railroads. *Poor's Manual of the Railroads of the United States* contains a statement which shows the number of miles of steam railroad track, exclusive of elevated city passenger railway tracks, that were laid with iron and steel rails respectively in each year from 1880 to 1907. In 1880 81,967 miles were laid with iron rails and 33,680 miles, or 29.1 per cent., were laid with steel rails. In 1907 9,319.88 miles were laid with iron rails and 314,713.50 miles, or 97.1 per cent., were laid with steel rails, the total being 324,033.38 miles. In both years side tracks, double tracks, etc., are included. The length of the steam railroads completed and in operation in the United States at the close of 1907, not including side tracks, second tracks, etc., and excluding all elevated city passenger railways, was 228,128.10 miles. The *Manual*, in giving the mileage of steam railroads in 1907 as aggregating 324,033.38 miles, states that 224,382.19 miles were single track and 99,651.19 miles were second track, sidings, etc. At the end of 1906 there were 36,932 additional miles of street and suburban railway lines in the United States. Of this mileage 36,212 miles were operated by electricity.

Much of the progress of this country in the manufacture of Bessemer steel rails has been due to the enterprise displayed by Andrew Carnegie at the Edgar Thomson steel works, at Braddock, east of Pittsburgh, the site of Braddock's defeat in 1755, the construction of which was undertaken in 1873 by Carnegie, McCandless & Co. and completed in 1875 by the Edgar Thomson Steel Company, Limited. In both companies Mr. Carnegie was the leading spirit and stockholder, and his brother, Thomas

M. Carnegie, who died in 1886, was also a stockholder. The works were built expressly to make Bessemer steel rails. They made their first blow on August 26, 1875, and rolled their first steel rail on September 1, 1875. At first only a Bessemer plant and a rolling mill were built, but in 1879 the erection of large blast furnaces was commenced. Until these furnaces were built the Edgar Thomson steel plant was largely supplied with pig iron from the two near-by Lucy furnaces, built respectively in 1872 and 1877, and owned by the Carnegie brothers and others.

From year to year Mr. Carnegie steadily increased the capacity of the Edgar Thomson works and thus cheapened the cost of producing rails, at the same time increasing his financial interest in the ownership of the works. From the first he had unbounded faith in the future of the steel rail; he knew that its general substitution for the iron rail on American railroads was sure to come at an early day. He foresaw this evolution and fully prepared for it when experienced manufacturers and even many railroad officials continued to praise the iron rail. Hence, while others were timid or neglectful of their opportunities, he introduced at the Edgar Thomson works from time to time the latest and most economical methods of manufacture; the blast furnaces at these works were the best in the country, the Bessemer converters were the largest, and the rail mill was the swiftest; so that, when an extraordinary demand for steel rails would come, as it often did come, he was fully prepared to meet it and at a lower cost than that of his competitors. He had business foresight in an eminent degree; he had unfaltering courage; and more than all his cotemporaries he believed in tearing out and making a scrap heap of even modern machinery when better machinery could be found. The best engineering talent in the country was engaged to bring the Edgar Thomson works up to the highest possible state of efficiency.

These characteristics were again illustrated when Mr. Carnegie and his partners in the firm of Carnegie Brothers & Co. obtained full control of the Homestead steel works in 1883, and again in 1890 when Carnegie Brothers & Co., then operating the Edgar Thomson works, suc-

ceeded to the ownership of the Duquesne steel works, with the result that steel in other forms than rails has been greatly cheapened to all consumers. This lowering of steel prices was accomplished through the use of the best mechanical appliances and the production of the largest possible tonnage. At the Edgar Thomson works Mr. Carnegie set the pace for a large annual tonnage of steel rails, and this policy was also applied to the production of pig iron and other products. His American competitors were soon compelled to abandon their conservative ideas and to enlarge the capacity and increase the efficiency of their works. And he has compelled Europe to revise in a large measure its metallurgical practice and also to cheapen its prices for all steel products. It has freely copied the devices and processes which his engineers, with his encouragement, had introduced or perfected. Of the engineers referred to Mr. Carnegie's first superintendent at the Edgar Thomson works, Captain William R. Jones, whose tragic death occurred in 1889, is entitled to special mention. To these engineers and to his "young partners" Mr. Carnegie has always acknowledged that he was under great obligations.

Mr. Carnegie's distinguished and remarkable career as an iron and steel manufacturer, which conspicuously began on the threshold of the fourth quarter of the nineteenth century, when the Edgar Thomson works were first put in operation, although he had previously been identified with our iron industry, may be said to have ended immediately after the close of the nineteenth century, in February, 1901, when he transferred to the United States Steel Corporation the ownership of all the iron and steel properties and auxiliary enterprises in which he held a controlling proprietary interest. Soon afterwards, in 1902, he was chosen president of the Iron and Steel Institute, whose membership is not restricted by political or geographical lines but which has its home in Great Britain, and he presided over its deliberations at the spring and autumn sessions of 1903, at London and Barrow respectively, on each occasion delivering an address. He also presided at the spring session of the Institute at London

in 1904 and at the autumn meeting in New York in the same year. No higher honor can be conferred upon any iron and steel manufacturer, wherever his home may be, than to be elected to the presidency of the Iron and Steel Institute. Mr. Carnegie is the only American who has received this honor.

The great success of the Edgar Thomson steel works and of other Bessemer plants in the United States led to the erection in Allegheny county of two competing steel works, already noticed: the Homestead steel works, which were completed and put in operation in 1881, and the Duquesne steel works, which were undertaken in 1886 and put in operation in 1889. Both these works were built to make Bessemer steel and its products, but, while the Homestead works were erected to make miscellaneous products, including rails, the Duquesne works were built to make rails and billets. The Homestead works rolled their first steel rail on August 9, 1881, and the Duquesne works rolled their first steel rail in March, 1889. Down to their absorption by Carnegie Brothers & Co. in 1883 the Homestead works rolled about 125,000 tons of rails, and down to their absorption by Carnegie Brothers & Co. in 1890 the Duquesne works rolled in all about the same number of tons, all, or nearly all, of the rails rolled by both works being of heavy sections. Since the changes in ownership above noted these works have not made many rails. The Homestead works have not made any rails since 1894 and the Duquesne works have not made any rails since 1897. The Homestead works were built by the Pittsburgh Bessemer Steel Company and the Duquesne works by the Allegheny Bessemer Steel Company. Both companies were composed of Pittsburgh capitalists.

The prominence of Western Pennsylvania in the manufacture of steel rails to-day is best shown by a reference to the statistical record. In 1906 the whole country made 3,791,459 tons of Bessemer steel rails, and of this large production Western Pennsylvania made 1,105,941 tons, or over 29 per cent. of the country's total production. This large tonnage was almost entirely rolled at the Edgar Thomson and the Cambria works, operated respectively

by the Carnegie Steel Company and by the Cambria Steel Company.

The first 30-foot rails that were rolled in this country were rolled at the Cambria iron works in 1855. These were iron rails and were perfectly made, but there being no demand for them they were used in the company's tracks. In 1876 these works rolled the largest aggregate tonnage of rails that had been rolled in one year by one mill in this country up to that time. Their production of rails in that year was 92,627 tons, of which 42,538 tons were iron rails and 50,089 tons were steel rails.

The first 60-foot rails that were rolled in this country were rolled at the Edgar Thomson steel works in the fall of 1875 and were made of steel. At the Centennial Exhibition at Philadelphia in 1876 the Edgar Thomson Steel Company exhibited a steel rail which at that time was the longest rail that had ever been rolled. It was 120 feet long and weighed 62 pounds to the yard.

When the Edgar Thomson steel works were built they embraced two five-ton Bessemer converters. Their equipment to-day includes four fifteen-ton converters. The following table gives the annual production of Bessemer steel rails by these works from 1875 to 1907. This table presents the most remarkable record in the manufacture of iron and steel that has ever been printed. In thirty-three years these works produced 11,122,189 tons of rails.

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1875	5,853	1886.....	173,001	1897.....	477,363
1876	32,226	1887.....	192,999	1898.....	561,757
1877	48,826	1888.....	148,293	1899.....	604,343
1878	64,505	1889.....	277,401	1900.....	626,831
1879	76,044	1890.....	332,942	1901.....	708,113
1880	100,095	1891.....	264,469	1902.....	709,906
1881	151,507	1892.....	330,511	1903.....	734,859
1882	143,561	1893.....	230,336	1904.....	550,945
1883	154,892	1894.....	220,337	1905.....	720,562
1884	144,090	1895.....	324,778	1906.....	826,582
1885	126,656	1896.....	300,776	1907.....	756,830

The mechanical genius and the tireless energy of the American people lie, of course, at the foundation of all

our industrial achievements. In the development of our iron and steel industries the possession of all the necessary raw materials of manufacture gave opportunity for the employment of these national traits. The rapid growth of the country in population created an active demand for iron and steel for ordinary domestic and mechanical purposes, but the stimulus given to the building of railroads after 1850, and particularly after our protective tariff policy was firmly established, gave to the manufacture of these products its greatest opportunity. More than one-half of all the iron and steel that has been produced in this country has gone into the construction and equipment of our railroads. We have to-day more miles of railroad than the whole of Europe and more than two-fifths of all the railroad mileage of the world.

Steel rails have been made and are still made at other works in Pennsylvania than those that have been described in this chapter. Virtually all are in Eastern Pennsylvania and are well known. It will be remembered that one of the objects of this volume is the presentation of industrial information relating to Western Pennsylvania that has not heretofore been widely known.

Reference has been made in this chapter to the consolidation in this country in 1866 of the ownership of the various patents which covered the Bessemer, Kelly, and Mushet inventions relating to the manufacture of pneumatic steel, now universally known as Bessemer steel. The credit of accomplishing this important result is due mainly to the tact and good judgment of Daniel J. Morrell, one of the owners of the Kelly and Mushet patents.

This is also the proper place to mention that the important invention, in 1877, of Sidney Gilchrist Thomas and Percy C. Gilchrist, two London chemists, which made possible the manufacture of basic steel, either by the Bessemer process or by the open-hearth process, was introduced in this country through the enterprise of Andrew Carnegie, who purchased the control of the Thomas-Gilchrist patents for the United States in 1879, subsequently transferring this control to the Bessemer Steel Company, Limited, which owned the consolidated Bessemer patents.

CHAPTER XXI.

CORNWALL AND OTHER IRON ORES.

IN the early part of its history Pennsylvania owed much of the activity of its iron trade to its possession of the wonderful Cornwall iron ore deposits, and in its later history it owes the pre-eminence of its iron and steel industries largely to the nearness of Lake Superior ores and to its possession of Connellsville coking coal. A brief history of the development of the Cornwall mines and of the opening of the Lake Superior mines, and of the first shipments from these last mentioned mines, will be given in this chapter, accompanied by complete statistics of the shipments from all these mines down to the close of 1907.

The Cornwall ore hills, which comprise three mountains of magnetic iron ore near Lebanon, Pennsylvania, were conveyed by John Penn, Thomas Penn, and Richard Penn, proprietors-in-chief of the province of Pennsylvania and the counties of Newcastle, Kent, and Sussex on the Delaware, by their warrant dated London, May 8, 1732, to Joseph Turner, of Philadelphia. Turner assigned the entire tract to William Allen on April 5, 1734, and on the 28th and 29th of November, 1737, Allen assigned the tract to Peter Grubb, to whom a patent was issued on August 2, 1745. Peter Grubb built Cornwall furnace in 1742. He died intestate about 1754, and his estate descended to his sons, Curtis and Peter Grubb, Curtis receiving two-thirds under the intestate law of that day and Peter one-third. Both sons were colonels in the Revolution. On June 28, 1783, Curtis conveyed a one-sixth interest to Peter Grubb, Jr., his son. By articles of agreement, dated September 26, 1785, Peter Grubb, Jr., grandson of the first Peter Grubb and son of Curtis Grubb, sold to Robert Coleman his share of the Cornwall ore hills, Cornwall furnace, and appurtenances, reserving the right for a sufficient quantity of ore for one furnace, which right is held and exercised to-day by the proprietors of Robesonia furnace,

in Berks county. The deed for the share sold to Robert Coleman, signed by Peter Grubb, Jr., and his wife Mary, is dated May 9, 1786. After that year Robert Coleman, through successive purchases from the Grubbs, acquired four additional sixths of the property originally conveyed by the Penns to Joseph Turner. At Robert Coleman's death in 1825 his estate was devised to his four sons.

We need not give the further connection of either the Coleman or the Grubb family with the Cornwall ore hills after the death of Robert Coleman. A detailed account will be found in the annual report of the Geological Survey of Pennsylvania for 1885. The interest of these families in the ownership of the Cornwall mines is now comparatively small. A few years ago the Pennsylvania Steel Company purchased from the heirs of G. Dawson Coleman a controlling interest in the Cornwall iron ore mines. Neither the Coleman nor the Grubb family limited its operations to the Cornwall "ore banks and mine hills," but each engaged in the manufacture of iron.

John Grubb, the father of Peter Grubb, 1st, who built Cornwall furnace, was a native of Cornwall, in England, whence he emigrated to this country in 1692, landing at Grubb's Landing, on the Delaware, near Wilmington. Peter Grubb, his son, was born at Grubb's Landing. A tradition in his family says that he built a furnace in 1735 about half a mile from the site of Cornwall furnace. But this supposed furnace was probably a bloomary, which may be regarded as Mr. Grubb's first iron enterprise. The earliest record evidence of his connection with the iron industry in Lancaster county is contained in "ye leace" of Cornwall ore lands in 1739 by Peter Grubb to Samuel Grubb and Joseph Taylor. In this lease Peter Grubb is styled an "ironmaster," and it says that he "intends to build an iron furnace" on land adjacent to that leased to Samuel Grubb and Joseph Taylor. That furnace was undoubtedly Cornwall furnace, built in 1742.

In Israel Acrelius's *History of New Sweden*, written about 1756, appears the following statement: "Cornwall, or Grubb's ironworks, in Lancaster county. The mine is rich and abundant, forty feet deep, commencing two feet

under the earth's surface. The ore is somewhat mixed with sulphur and copper. Peter Grubb was its discoverer."

Robert Coleman was born near Castle Fin, Ireland, on November 4, 1748. In 1764 he came to Pennsylvania, and after filling various clerical positions became a clerk for James Old, first at Quittapahilla forge, near Lebanon, and afterwards at Reading furnace, on French creek.

About the end of 1773 Mr. Coleman rented Salford forge, near Norristown, where he remained three years. His grandson, G. Dawson Coleman, had in his possession many years ago a document of rare interest, illustrative of Revolutionary experience at Salford forge. It is indorsed: "Robert Coleman's memorial, presented August 26th, 1776, asking permission for his clerk and three forgesmen to be exempted from marching with the army to Amboy." It represented that the memorialist was an officer in Colonel Potts's battalion and was then on his march to Amboy; that he had rented a forge for three years at a rental of "two hundred a year," the lease of which would expire in three months; and that the "principal part" of his workmen were Associators, who, if obliged to march with the militia, would cause him great loss and entirely prevent him from working up his stock in hand. The request of Mr. Coleman was granted the same day by the Council of Safety, to which body it was addressed.

In one of his numerous contributions to Pennsylvania history Dr. F. R. Diffenderffer says that "on October 30, 1777, Colonel Grubb notified the Council of Safety that his furnace was in blast for the purpose of casting salt pans, but he could not proceed because his manager, founder, carpenter, and colliers were absent with the militia. They were ordered to be released forthwith."

For more than a quarter of a century Robert Coleman was the most prominent ironmaster in Pennsylvania. His descendants and those of Peter Grubb are still identified with the manufacture of iron, and the Cornwall ore hills are still relied upon to furnish large quantities of iron ore for furnaces in Eastern Pennsylvania. Prior to the development of the Lake Superior iron ore region the Cornwall mines were annually the most productive group

of all the iron ore mines in this country, and this distinction they held for several years after Lake Superior ores came into general use.

The following table shows the production of iron ore, in gross tons, by the Cornwall ore mines from their first opening in 1740 to January 1, 1908. Down to the year last mentioned these mines had produced more iron ore than any other single iron ore property in the United States, including the most productive of the Lake Superior mines.

Periods.	Tons.
From 1740 to 1790, three furnaces, each 2,000 tons yearly, about	300,000
From 1790 to 1848, six furnaces, each 2,000 tons yearly, about..	700,000
From April 1, 1848, to January 1, 1853	173,190
From January 1, 1853, to February 1, 1864, (date of formation of Cornwall Ore Bank Company,) the shipments amounted to	1,351,717

From February 1, 1864, to the end of 1907 the shipments were as follows :

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1864	165,915	1879	268,488	1894	371,710
1865	114,802	1880	231,172	1895	614,598
1866	216,659	1881	249,050	1896	463,059
1867	202,755	1882	309,680	1897	419,878
1868	165,843	1883	363,143	1898	584,342
1869	173,428	1884	412,319	1899	763,152
1870	174,407	1885	508,864	1900	558,713
1871	176,054	1886	688,054	1901	747,012
1872	193,317	1887	667,210	1902	594,177
1873	166,782	1888	722,917	1903	401,469
1874	112,429	1889	769,020	1904	174,331
1875	98,924	1890	686,302	1905	617,060
1876	137,901	1891	663,755	1906	763,788
1877	171,588	1892	634,714	1907	704,004
1878	179,299	1893	439,705	Grand total	20,366,696

In the above statistics the word production is strictly applicable only down to 1853, but for that year and for all subsequent years the figures represent shipments only. For all practical purposes, however, production and shipments may be regarded as convertible terms, as in a series of years production and shipments would be equalized.

The existence of iron ore on the southern border of Lake Superior was known to white traders with the In-

dians as early as 1830, but the first discovery by white men of the iron ore of this region was made on the 16th of September, 1844, near the eastern end of Teal lake, in Michigan, by William A. Burt, a deputy surveyor of the United States Government. In June, 1845, the Jackson Mining Company was organized at Jackson, Michigan, for the purpose of exploring the mineral districts of the southern shore of Lake Superior, and later in the summer of that year this company secured possession of the since celebrated Jackson iron mountain in the Marquette district, near the place of Mr. Burt's discovery. Iron ore is still taken from the Jackson mine.

The first shipment of iron ore from the Marquette district of the Lake Superior region, the first district to be developed, occurred in 1850, in which year A. L. Crawford, of New Castle, Pennsylvania, took to that place about ten tons of Jackson ore, a part of which was converted into blooms and these blooms were rolled into bar iron. Mr. Crawford's shipment of iron ore was hauled around the Sault Ste. Marie on a strap railroad about one and a quarter miles long. Shipments from this district for commercial purposes did not begin until 1853, when about 70 tons were used in two blast furnaces in Mercer county, Pennsylvania. The next Lake Superior iron ore district to be developed was the Menominee district, from which the first shipments were made in 1877, aggregating 10,405 tons. In 1884 the first shipments were made from the Vermilion district, aggregating 62,124 tons. Next followed the development of the Gogebic district, from which the first shipments were also made in 1884, aggregating 1,022 tons. In 1892 the development of the Mesabi district began. Shipments in that year amounted to 4,245 tons.

In 1853 a few tons of Jackson ore were shipped to the World's Fair at New York. On June 18, 1855, the first steamer passed through the Sault Ste. Marie Canal from the lower lakes to Lake Superior. The vessel was the side-wheel steamer *Illinois*. The steamer *Baltimore* passed down on the same day and was the first steamer to make a continuous trip in the opposite direction. The editor of the *Marine Review*, Ralph D. Williams, says that the first

shipment of iron ore through the Sault Canal was made on the brig *Columbia* on August 17, 1855, and consisted of 132 tons, shipped by the Cleveland Iron Mining Company and consigned to itself. He further says that all the ore that left Lake Superior that year, amounting to 1,449 tons, was shipped by the same company.

In the following table the shipments of iron ore from the Lake Superior iron ore region are given from the beginning of shipments in 1853 and 1854 to the end of 1907. The word shipments is not synonymous with production. Michigan, Wisconsin, and Minnesota comprise the Lake Superior iron ore region, and strictly speaking include only the Marquette, Menominee, Gogebic, Vermilion, and Mesabi iron ore districts, which are near the great lake. The figures for 1903, 1904, 1905, 1906, and 1907 include the shipments from the Iron Ridge mine in the southern part of Wisconsin. Shipments from the Baraboo district, which is also in the southern part of Wisconsin, are included in the figures for 1904, 1905, 1906, and 1907.

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1853-54 ...	3,000	1872.....	900,901	1890.....	9,012,379
1855	1,449	1873.....	1,162,458	1891.....	7,062,233
1856	36,343	1874.....	919,557	1892.....	9,069,556
1857	25,646	1875.....	891,257	1893.....	6,060,492
1858	15,876	1876.....	992,764	1894.....	7,748,932
1859	68,832	1877.....	1,015,087	1895.....	10,438,268
1860	114,401	1878.....	1,111,110	1896.....	9,916,035
1861	49,909	1879.....	1,375,691	1897.....	12,469,638
1862	124,169	1880.....	1,908,745	1898.....	14,024,673
1863	203,055	1881.....	2,306,505	1899.....	18,251,804
1864	243,127	1882.....	2,965,412	1900.....	19,059,393
1865	236,208	1883.....	2,353,288	1901.....	20,593,537
1866	278,796	1884.....	2,518,692	1902.....	27,571,121
1867	473,567	1885.....	2,466,372	1903.....	24,289,878
1868	491,449	1886.....	3,568,022	1904.....	21,822,839
1869	617,444	1887.....	4,730,577	1905.....	34,353,456
1870	830,940	1888.....	5,063,693	1906.....	38,523,439
1871	779,607	1889.....	7,292,754	1907.....	42,245,070

The grand total of the shipments of iron ore from the Lake Superior region down to the close of 1907 amounted to 380,649,446 gross tons—a stupendous aggregate.

The iron ores of Missouri received at one time a great deal of attention from iron and steel manufacturers at Pittsburgh and at other points in the Ohio valley, but more than thirty years ago they were overshadowed in importance by the iron ores of Lake Superior. The best known Missouri mines are located at Iron Mountain and Pilot Knob. The former were operated as early as 1845 and the latter as early as 1847. Iron Mountain has produced over 3,000,000 tons of ore and Pilot Knob has produced over 1,000,000 tons. In 1872 there were mined and shipped from Iron Mountain alone 269,480 tons. A large part of the shipments from Iron Mountain and Pilot Knob was taken forty years ago to points on the Ohio river. The receipts of Missouri ore at St. Louis in 1873, largely for shipment to other localities, amounted to 349,-357 tons. Of the total receipts in that year 113,327 tons were shipped by river and 63,717 tons by rail. In those days Pittsburgh was the leading purchaser of Missouri ores, her blast furnaces and rolling mills taking 35,440 tons in 1871, 68,420 tons in 1872, and 113,069 tons in 1873. The production of iron ore by all the mines of Missouri in the census year 1870 amounted to 159,680 tons, in the census year 1880 to 344,819 tons, and in the calendar year 1889 to 265,718 tons. The production has since declined. In 1905 it amounted to 113,012 tons, but in some previous years it had fallen considerably below 100,000 tons annually. In 1907 the shipments amounted to 104,815 tons.

In late years shipments of southern pig iron to northern and western markets have constituted a leading feature of the home iron trade, but only a little more than thirty years ago these shipments were almost unknown and southern men were looking to the North for a market for their ores. In 1872, 1873, and 1874 considerable quantities of iron ore from Tennessee, Alabama, and Georgia were shipped to furnaces in Indiana and Ohio. The trade began in 1872, reached its culmination in 1873, and came to an end in 1874. In 1873 George H. Hull, of Louisville, shipped to the North about 25,000 tons of Alabama and brown hematite iron ore mined on the Selma, Rome, and Dalton Railroad, and about the same number of tons

of red fossiliferous iron ore mined near Birmingham. A considerable part of these ores was shipped to Brazil, Knightsville, Terre Haute, and Harmony in Indiana, and to Mingo Junction and Steubenville in Ohio. These ores when delivered cost from \$7.75 to \$9.25 per ton, and two tons of ore were required to make one ton of pig iron.

Fifty years ago Lake Champlain iron ores were very popular for fettling in puddling furnaces as far west as Pittsburgh, but their use for this purpose is now confined to eastern rolling mills. From June to December of 1872 20,580 tons of these ores were received at Pittsburgh. Soon after that year Missouri and Lake Superior ores superseded Lake Champlain ores at Pittsburgh for the purpose mentioned.

The following details were given to us by the late Jacob Reese: "I sold more than 10,000 tons of Champlain ore for fettling in Pittsburgh in 1856 and 1857, and it was in use in Pittsburgh many years prior to my sales. In 1856 I bought from the Cleveland Iron Mining Company the first cargo of 800 tons of Lake Superior iron ore that they had brought to Cleveland. I shipped the ore to Pittsburgh and sold it for fettling, and from 1856 to 1860 I sold over 50,000 tons of that ore for that purpose."

In a subsequent chapter credit will be claimed for Pennsylvania capital and enterprise in the development of the iron ores of Cuba. Two companies, both controlled entirely by Pennsylvania capital, are now operating the iron ore mines of Cuba—the Juragua Iron Company and the Spanish-American Iron Company. The total shipments by all companies from Cuba to all countries from the opening of the mines in 1884 to the close of 1907 were as follows, in gross tons: the Juragua Iron Company, Limited, and the Juragua Iron Company, 4,565,491 tons; the Sigua Iron Company, 20,438 tons; the Spanish-American Iron Company, 4,018,494 tons; and the Cuban Steel Ore Company, 41,241 tons: total since 1884, 8,645,664 tons. Nearly all of this total was shipped to the United States. The mines of the Sigua Iron Company and the Cuban Steel Ore Company were abandoned several years ago.

CHAPTER XXII.

COAL AND COKE IN PENNSYLVANIA.

THE history of the development of the anthracite and bituminous coal industries of Pennsylvania has been so fully presented in various publications that it need not be here repeated, but some of the recent features of this development are important and will be presented in this chapter. (See *Iron in All Ages*, pages 467 to 478.)

It has been shown in a previous chapter that in 1905 Pennsylvania produced 49.9 per cent. of all the coal that was mined in the United States. Of this large percentage the anthracite production of the year supplied approximately 19.77 per cent. and the bituminous production supplied about 30.15 per cent. These proportions were materially altered in 1906, the anthracite production largely decreasing and the bituminous production largely increasing. In 1907 anthracite production again increased.

The production of anthracite coal in Pennsylvania in 1905 by counties is given in the following table by Hon. Edward W. Parker, statistician in charge, division of mining and mineral resources of the United States Geological Survey. The production in 1906 was 63,645,010 gross tons.

Counties—1905.	Gross tons.	Counties—1905.	Gross tons.
Susquehanna	607,273	Columbia	1,097,944
Lackawanna	17,525,995	Sullivan	274,167
Luzerne	26,216,518	Northumberland	4,920,098
Carbon	2,193,229	Dauphin	724,513
Schuylkill	15,779,415	Total	69,339,152

Of the above total production of anthracite coal in Pennsylvania in 1905 there were shipped to market 61,-654,432 tons, sold to the local trade and to employés 1,402,644 tons, and used at mines for steam and heat 6,282,-076 tons: total, 69,339,152 tons. The first shipments of anthracite coal for which exact statistics are available were made from the Lehigh region in 1820, when they

amounted to 365 tons. The production in 1905 was the largest that had been recorded down to that year.

The production of bituminous coal in Pennsylvania in 1905 and 1906 by counties is given in the following table in net tons of 2,000 pounds, for which we are also indebted to Mr. Parker. The net ton of 2,000 pounds is in universal use in the coal trade in Western Pennsylvania and the West, while throughout the East all coal, both bituminous and anthracite, is sold by the gross ton. The production of bituminous coal in Pennsylvania in 1905 was 118,413,637 net tons and in 1906 it was 129,293,206 tons. The table specifies the coal made into coke at the mines; coal consumed in making coke elsewhere is not indicated.

Counties—Net tons.	Production in 1905.	Made into coke at mines in 1905	Production in 1906.	Made into coke at mines in 1906
Allegheny	13,662,610	.....	16,823,027	.....
Armstrong	2,497,314	6,844	2,574,758	8,594
Beaver	82,676	.....	81,531	.....
Bedford	752,715	213,811	734,855	155,611
Blair	348,749	67,918	402,438	78,619
Butler	550,589	.....	803,499	.....
Cambria	12,600,891	1,292,574	12,439,152	1,205,491
Centre	810,441	.....	895,434	1,002
Clarion	714,478	.....	719,548	.....
Clearfield	7,248,305	225,491	5,944,745	252,414
Elk	1,249,337	77,328	944,367	57,334
Fayette	24,250,989	16,112,687	27,044,451	18,608,461
Huntingdon	559,039	.....	630,155	.....
Indiana	4,477,431	303,083	4,657,457	226,089
Jefferson	6,393,985	1,310,108	5,160,195	1,165,598
Lawrence	267,470	.....	257,716	.....
Mercer	707,964	.....	842,648	.....
Somerset	6,412,672	81,075	6,674,191	41,307
Tioga	706,723	.....	826,925	.....
Washington	10,609,051	67,183	12,714,405	188,871
Westmoreland	22,998,726	8,125,022	27,573,420	9,006,467
Other counties*	511,482	43,158	548,289	30,336

* Cameron, Clinton, Greene, and Lycoming. Also include small mines.

There are sixty-seven counties in Pennsylvania, and of these counties twenty-five produced bituminous coal in 1905 and 1906. Westmoreland and Fayette are the leading bituminous coal-producing counties, due largely to the suitability of the coal mined in their borders for conversion

into Connellsville coke. These coking-coal counties will long maintain their present leadership as coal producers. Allegheny, Washington, and Cambria counties come next in the production of coal. Without reference to the statistical record few persons would suppose that Allegheny county, the great iron and steel centre of the world, is one of the greatest coal-producing counties of the country, its output in 1906 amounting to nearly 17,000,000 net tons. Nor would they suppose that Cambria county, in which the works of the Cambria Steel Company are located, is also a leading coal-producing county. This prominence by Cambria county has been attained within the last few years. Washington county has greatly added to its coal record from year to year. Jefferson county has also come to the front as a coal-producer within recent years, while Somerset county has started upon a coal-producing career that has already eclipsed that of Jefferson county. Clearfield has long been active as a producer of bituminous coal. In Indiana and Armstrong counties a start has recently been made in the development of their bituminous deposits which has produced substantial results.

The earliest statistical mention of the production of bituminous coal in Pennsylvania is in the census of 1840, when it was reported to have amounted to 464,826 net tons. The census of 1860 reported 2,690,786 net tons. In 1907 the whole country produced 352,540,830 gross tons, of which Pennsylvania's share was 134,215,569 tons.

The same high authority from which we have obtained the coal statistics of Pennsylvania for 1905 and 1906 does not separate the coke production of the State by counties but only by districts, the principal districts being the Connellsville in Westmoreland and Fayette counties and the Lower Connellsville in Fayette county, south of the Connellsville district proper. The Connellsville district is the most productive coke district in the world. In addition to the Connellsville and Lower Connellsville districts there is another but comparatively unimportant district in Westmoreland county, which is known as the Upper Connellsville district, and which "lies north of a point a short distance south of the town of Latrobe."

The beginning of the manufacture of Connellsville coke dates commercially from the winter of 1841 and 1842, when two beehive ovens were built on the farm of John Taylor, on the Youghiogheny river, a few miles below Connellsville. The product of these ovens was shipped to Cincinnati in 1842 and there sold with much difficulty.

The production of coke in Pennsylvania in the census year 1880 was 2,317,149 net tons, made from 3,608,095 net tons of coal. In the whole country the production of coke in the same census year was 2,752,475 net tons, made from 4,360,110 net tons of coal.

The total production of coke in Pennsylvania in 1905 was 20,573,736 net tons, of which 11,365,077 tons were made in the Connellsville district proper, 3,871,310 tons in the Lower Connellsville district, and 755,946 tons in the Upper Connellsville district: total for the three districts, 15,992,333 net tons. The total production by the whole country in 1905 was 32,231,129 tons, nearly one-half of which, or 49.6 per cent., was Connellsville coke.

The total production of coke in Pennsylvania in 1906 was 23,060,511 net tons, of which 12,057,840 tons were made in the Connellsville district proper, 5,188,135 tons in the Lower Connellsville district, and 1,011,229 tons in the Upper Connellsville district: total for the three districts, 18,257,204 net tons. The total production by the whole country in 1906 was 36,401,217 net tons. The production of all the Connellsville districts in 1906 was a little more than one-half of the country's total production of coke in that year, or over 50.1 per cent. The total production of coke in 1907 was 40,779,564 net tons, of which Pennsylvania produced 26,513,214 tons, or over 65 per cent.

Western Pennsylvania, in which nearly all the bituminous coal of the State is mined, is our great bituminous "black district." In the quantity of coal it annually produces it is now far in advance of the great anthracite coal region in Eastern Pennsylvania. It embraces a much larger area than its anthracite rival, and the developments of the near future may somewhat widen this area. The area of anthracite development in Pennsylvania is already defined. In all the leading counties of Western

Pennsylvania there has recently existed the greatest mining activity. In nearly all the counties included in the table investors and mining engineers have lately been busily engaged in locating and securing title to valuable coal territory that had previously been wholly undeveloped and neglected. Some of these acquisitions have already been developed, while others will be held as investments or to supplement fields that are now being worked out. The traveler on any of the railroads through the counties referred to will be amazed at the activity in the production of coal that is observable on every hand, accompanied in many localities by equal activity in the manufacture of coke.

But over all this activity—over all this “black district”—there hangs a black cloud other than that which the coal itself makes when it is converted into coke or is consumed by locomotives and the manufacturing enterprises that it has created. A very large proportion of the population of Western Pennsylvania which is engaged in mining coal and in making coke is composed of undesirable foreign elements, and with these are associated many undesirable negroes who have been brought from the Southern States. So numerous and oftentimes so lawless are these foreign and negro laborers that the character of whole communities has been radically changed within the last ten or fifteen years. Indiana and Somerset counties, for instance, have been largely transformed by these laborers from peaceful agricultural districts into unattractive centres of coal-mining and coke-making activity in which dissipation and lawlessness constantly prevail. The Black Hand is not fully held in check by the State constabulary, a police force that was established solely for the purpose of keeping the lawless foreign element under control. The courts in many counties are kept busy trying Black Hand and other foreign-born lawbreakers. The prosperity that has brought into Western Pennsylvania the elements that we have referred to is very far from being an unmixed blessing. Similar labor conditions have long existed in the anthracite region. The principal offenders of foreign birth in Western Pennsylvania are Italians.

CHAPTER XXIII.

INDUSTRIES DEVELOPED BY PENNSYLVANIANS.

PRIOR to 1835 coke had been used in a small way in forges in Pennsylvania and as a mixture with charcoal in a few blast furnaces. In that year William Firmstone, a native of England, succeeded in making good forge pig iron for one month at the end of a blast at Mary Ann furnace, in Huntingdon county, Pennsylvania, with coke from Broad Top coal. This pig iron was taken to a forge three miles distant and made into blooms. In 1837 F. H. Oliphant made at Fairchance furnace, near Uniontown, in Fayette county, Pennsylvania, a quantity of coke pig iron exceeding 20 tons and probably exceeding 100 tons.

These two experiments marked the beginning of the coke industry in this country in supplying a desirable fuel in the manufacture of pig iron. Our first continuous use of coke in the blast furnace was accomplished at Lonaconing furnace, in Western Maryland, in 1838 or 1839. In June, 1839, this furnace, which was built by the George's Creek Company, was making about 70 tons per week of good foundry iron. Other furnaces, particularly in Western Pennsylvania, soon afterwards used coke, but its use as a furnace fuel did not come rapidly into favor. For many years after 1840 anthracite coal was the favorite blast furnace fuel next to charcoal. It was not until after 1850 that the use of coke began to exert an appreciable influence in the manufacture of pig iron. In 1849 there was not one coke furnace in blast in Pennsylvania. In 1856 there were twenty-one furnaces in Pennsylvania, all in the western part of the State, and three in Maryland which were using coke or were adapted to its use. After 1856 the use of coke in the blast furnace increased in Pennsylvania and was extended to other States, but it was not until 1869 that the country made more pig iron with coke than with charcoal, and not until 1875 that it made more than with anthracite. In 1907 more than 98

per cent. of the country's total production of pig iron was made with coke, either by itself or in combination with anthracite or raw bituminous coal. Pennsylvania produces more coke than all the other States combined.

After many unsuccessful experiments with anthracite coal in the blast furnace, and a few moderately successful experiments, the use of this fuel in the manufacture of pig iron was made entirely successful in 1840 by David Thomas, who on the 3d day of July of that year blew in the first furnace of the Lehigh Crane Iron Company, at Catasauqua, Pennsylvania, with the new fuel. Water power from the Lehigh river was used in blowing the furnace. On July 4 its first cast of pig iron was made. Other furnaces soon began to use anthracite coal, and in a few years the manufacture of anthracite pig iron became an important branch of the iron industry of Pennsylvania and adjoining States. In 1855 more pig iron was made with anthracite coal than with charcoal. About 1840 the use of anthracite coal in the puddling and heating furnaces of rolling mills in Eastern Pennsylvania and in some other States became general. It had previously been used in the generation of steam. Anthracite coal is but little used in the blast furnace in this country to-day, and the most of what is used is mixed with coke. In 1907 the total quantity of pig iron made with anthracite coal alone amounted to only 36,268 tons, all of which was made in the Lehigh valley.

The use of raw bituminous coal, or uncoked coal, in the blast furnace, which is now virtually abandoned, has been chiefly confined to the Shenango and Mahoning valleys in Pennsylvania and Ohio respectively, in which a very hard bituminous coal, known as splint coal, or block coal, is found, and which is not a good coking coal. The use of this coal in its raw state in the blast furnace dates from 1845, when Clay furnace, in Mercer county, Pennsylvania, was successfully operated with it for some time. In the same year Mahoning furnace, in Mahoning county, Ohio, was built to use this fuel. In 1856 six furnaces in Pennsylvania and thirteen in Ohio were using it, their production in that year being 25,073 gross tons. Some

progress was afterwards made in the use of the same coal in the Hocking valley in Ohio, and also in Clay county and neighboring counties in Indiana, but since 1880 its use has gradually declined, until to-day when used in making pig iron it is always mixed with coke. In 1890 the total production with this mixture was over 300,000 tons; in 1907 it was about 100,000 tons.

The first use of Lake Superior iron ore in a blast furnace in this country occurred in 1853 at Sharpsville furnace, in Mercer county, Pennsylvania, owned by David and John Park Agnew, and in the same year it was used at Clay furnace, in the same county, owned by the Sharon Iron Company, at both furnaces successfully. Block coal was used exclusively at both furnaces. After 1856 other furnaces in Pennsylvania and in other States began the use of Lake Superior ore.

The first use anywhere of Cuban iron ore was in 1884 at furnaces in Eastern Pennsylvania owned by the Bethlehem Iron Company and the Pennsylvania Steel Company, which companies had jointly undertaken through the Juragua Iron Company, Limited, the development of the iron ore deposits of Cuba. This development has since been continued on a large scale by this company and by other companies, as is shown on page 223.

The manufacture of steel by the old-time method of cementation never attained a position of much prominence in this country, while the manufacture of crucible steel made but slow progress down to about 1860. Up to this time the country's main reliance for steel was upon English manufacturers. The manufacture of crucible steel of the best quality was established on a firm basis when Hussey, Wells & Co. and Park, Brother & Co., of Pittsburgh, and Gregory & Co., of Jersey City, in the years 1860, 1862, and 1863, respectively, succeeded in making it as a regular product. Dr. Curtis G. Hussey, of Pittsburgh, is entitled to the credit of having established this industry in our country on a solid foundation, the firm of which he was the head having successfully, for the first time in our history, made crucible steel of the best quality as a regular product in 1860. Of the country's

total production of 131,234 tons of crucible steel in 1907 Pennsylvania made 87,556 tons, and almost 57 per cent. of this large proportion was made in Allegheny county.

The manufacture of Bessemer steel in this country was commenced in an experimental way at Wyandotte, Michigan, in 1864, and again at Troy, New York, in 1865. The steel made at Wyandotte was made by the Kelly Pneumatic Process Company, which was largely composed of Pennsylvanians—William Kelly, James Park, Jr., and William M. Lyon, of Pittsburgh, and Daniel J. Morrell, of Johnstown. In May, 1867, the Pennsylvania Steel Company made at its Steelton works the first Bessemer steel that was made in Pennsylvania. In 1867 the whole country made 2,679 tons of Bessemer steel and 2,277 tons of Bessemer steel rails. The first steel rails produced in the United States in commercial quantities were rolled by the Cambria Iron Company, at Johnstown, in August, 1867, from ingots made at the works of the Pennsylvania Steel Company. Pennsylvania has been by far the most active of all the States in the development of the Bessemer steel industry. The country's total production of Bessemer steel in 1906 was 12,275,830 tons, of which Pennsylvania made 39.3 per cent. In 1905 it made over 41 per cent. Of the total production of Bessemer steel rails in 1905 Pennsylvania's share was 34.3 per cent., and in 1906 it was 34.2 per cent.

The manufacture of steel by the Siemens-Martin, or open-hearth, process was introduced into this country in 1868 by Cooper, Hewitt & Co., at the works of the New Jersey Steel and Iron Company, at Trenton. This enterprise was not a commercial success. Open-hearth steel was first made in Pennsylvania by Singer, Nimick & Co., at Pittsburgh, in 1871 or 1872, and its manufacture was commercially successful. In August, 1875, there were thirteen establishments in this country which were then making open-hearth steel or were prepared to make it, and of these five were located in Pennsylvania, of which three were in Pittsburgh. The country's total production of open-hearth steel in 1875 was, however, only 8,080 tons, and ten years afterwards it was only 133,376 tons,

but in 1895 it was 1,137,182 tons and in 1905 it was 8,971,376 tons. Of the total production in 1905 Pennsylvania's share was 6,471,818 tons, or over 72 per cent. The production of Allegheny county in 1905 was 3,410,482 tons, or over 38 per cent. of the total production. The total production of open-hearth steel in 1907 was 11,549,736 tons, of which Pennsylvania made 7,868,353 tons. Allegheny county's production was 3,883,014 tons.

On May 24, 1884, the Pennsylvania Steel Company made the first basic Bessemer steel that was made in this country. It was of excellent quality but its production was not continued. No basic Bessemer steel has been made in the United States since 1897, when about 69,000 tons of ingots were produced at Troy, New York, by the Troy Steel Company.

The manufacture of basic open-hearth steel was commenced in this country in 1886 by the Otis Iron and Steel Company, at Cleveland, Ohio, which operated one furnace experimentally on basic steel for about ten weeks, when its further manufacture was discontinued. The manufacture of basic open-hearth steel in this country as a regular commercial product dates, however, from 1888, on the 30th of March of which year basic open-hearth steel was produced at the Homestead steel works of Carnegie, Phipps & Co., Limited, at Homestead, near Pittsburgh. In 1907 the whole country's production of basic open-hearth steel amounted to 10,279,315 tons.

In 1897 Samuel T. Wellman wrote from Cleveland to the New York *Railroad Gazette* as follows: "The first basic open-hearth steel made in this country was made at the works of the Otis Steel Company, of this city, under the immediate supervision of Mr. George W. Goetz. One furnace was started on January 19, 1886, with a magnesite bottom, the magnesite being imported from Austria in the fall of 1885. This furnace was kept at work making basic steel until April 6, 1886, making in all something over 1,000 tons of ingots. Just about that time the company became very hard pressed for steel to fill their orders and they decided to stop the manufacture of basic steel, as it was experimental."

Pennsylvania was the first among the States to develop the petroleum industry, and for many years after the beginning of this development it possessed a virtual monopoly of the production of petroleum. The petroleum industry has added greatly to the prosperity and wealth of Pennsylvania. Western Pennsylvania has produced most of the petroleum that has been found in this State.

Stowell's Petroleum Reporter for August, 1876, says: "The earliest mention of the existence of petroleum in the United States is probably that contained in a letter of July 8, 1627, written by the French missionary, Joseph Delaroche, and published in Sagard's *Histoire du Canada*. The locality mentioned is supposed to be near the present town of Cuba, Allegany county, New York. On a map published about 1760 there appear near the site of this town the words *Fontaine de Bitume*. The earliest mention of petroleum in Pennsylvania appears to be by Charlevoix in his journal of May, 1721, who speaks on the authority of Captain de Joncaire of the existence of a fountain at the head of a branch of the Ohio (Allegheny), 'the water of which is like oil and has the taste of iron,' and was used 'to appease all manner of pain.' On a map published in 1755 the word 'petroleum' appears near the mouth of the present Oil creek on the Allegheny river."

In *Appleton's Cyclopædia* Professor Peckham says: "The occurrence of petroleum about the headwaters of the Allegheny river in New York and Pennsylvania was known to the early settlers. The Indians collected it on the shores of Seneca lake and it was sold as medicine by the name of Seneca or Genesee oil."

Rev. David Zeisberger, the Moravian apostle to the Indians, in his journal written in 1769, makes mention of oil, or petroleum, in what is now Forest county, Pennsylvania. He says: "It is used medicinally for toothache, rheumatism, etc. Sometimes it is taken internally. It is of a brown color and burns well and can be used in lamps."

Some of the early salt wells of the Kanawha valley in West Virginia produced petroleum as well as salt. The earliest mention we have found of petroleum in these wells is in 1806; another reference is in 1829. As early as

1836 from 50 to 100 barrels of petroleum were annually collected in the Kanawha valley and sold as a medicine.

Petroleum was discovered in a salt well in Ohio in 1814. A salt well on Duck creek discharged petroleum in that year. Dr. S. P. Hildreth, of Marietta, in a contribution to the *American Journal of Science* in 1826 concerning the Ohio borings for salt water, says: "They have sunk two wells, which are now more than 400 feet in depth; one of them affords a very strong and pure water. The other discharges such vast quantities of petroleum, and besides is subject to such tremendous explosions of gas as to force out all the water and afford nothing but gas for several days, that they make but little or no salt. Nevertheless the petroleum is beginning to be in demand for lamps in workshops and manufactories."

In *Johnson's Cyclopædia* Professor Chandler says that "in 1829 a flowing oil well was accidentally obtained in Burkesville, Kentucky, and for two or three weeks the oil flowed over the surface of Cumberland river, and becoming ignited caused some apprehension of a general conflagration."

These details show the existence of petroleum in New York in 1627; in Pennsylvania in 1721; in the Kanawha valley as early as 1806; in Ohio in 1814; and in Kentucky in 1829. But petroleum did not become a commercial product until 1859, in which year Edwin L. Drake, a native of Greenville, New York, bored an oil well on Oil creek, at Titusville, Pennsylvania. On August 31, 1859, the production of petroleum in a commercial sense began at this well, which yielded about twenty-five barrels a day by pumping. Other wells were at once bored in Pennsylvania, New York, West Virginia, Ohio, and other States.

Samuel M. Kier, of Pittsburgh, was the first person to demonstrate the practicability of refining petroleum. This was done by him in 1850. He had previously collected petroleum from the salt wells near Tarentum, on the Allegheny river, and bottled it as a medicine. In the year mentioned he erected a small refinery in Pittsburgh and this enterprise was entirely successful.

As petroleum was often found in the wells that had

been bored for salt so natural gas was often found in wells that had been bored for petroleum. Sometimes all of these products were found in the same well. Natural gas and petroleum are, however, allied products. The existence of natural gas west of the Alleghenies has long been known. Its presence in the Kanawha valley is mentioned by Jefferson in his *Notes on Virginia*. Soon after 1840 gas was found in many salt wells in this valley and it was used for both heating and illuminating purposes. As early as 1821 natural gas was used at Fredonia, New York, to light houses and other buildings. But natural gas was not brought into general use anywhere in this country until many years after Colonel Drake's success in boring for petroleum at Titusville in 1859. At first, when found in boring for oil, it was usually allowed to escape into the atmosphere, but subsequently its great value caused it to be directed into pipes. The first gas well in the celebrated Murrysville district in Westmoreland county, Pennsylvania, was bored in 1878 expressly for gas, but for five years the immense product of this well was allowed to go to waste because it could not be controlled. In the decade between 1870 and 1880 natural gas began to be freely used in Western Pennsylvania and adjoining States for heating residences and for lighting streets, but it was not until after 1880 that it received much attention as a fuel in manufacturing establishments. Soon after this year its use for this purpose was greatly extended. Pittsburgh did not begin the general use of natural gas in its iron and steel works until 1883, when the Murrysville gas was first used. In November, 1907, the whole number of rolling mills and steel works in the United States which used natural gas was 137, of which 53 were in Allegheny county and 37 were in other parts of Western Pennsylvania.

At the Siberian rolling mill of Rogers & Burchfield, at Leechburg, Armstrong county, Pennsylvania, natural gas, taken from a well 1,200 feet deep, was first used as fuel in the manufacture of iron. In the fall of 1874 it was stated that during the preceding six months this gas had furnished all the fuel required for puddling, heating, and

making steam at these works. Soon after 1874 the firm of Spang, Chalfant & Co., owners of the Etna rolling mill, in Allegheny county, introduced natural gas in its works.

In Jefferson's *Notes on Virginia*, written in 1781-82, we find the following interesting account of a burning spring, which was without doubt supplied with natural gas: "In the low grounds of the Great Kanaway, 7 miles above the mouth of Elk river, and 67 above that of the Kanaway itself, is a hole in the earth of the capacity of 30 or 40 gallons, from which issues constantly a bituminous vapor in so strong a current as to give the sand above the orifice the motion which it has in a boiling spring. On presenting a lighted candle or torch within 18 inches of the hole it flames up in a column of 18 inches in diameter and four or five feet height, which sometimes burns out in 20 minutes, and at other times has been known to continue three days and then has been still left burning. The flame is unsteady, of the density of that of burning spirits, and smells like burning pit coal. Water sometimes collects in the basin, which is remarkably cold, and is kept in ebullition by the vapor issuing through it. . . This, with the circumjacent lands, is the property of his Excellency General Washington and of General Lewis; there is a similar one on Sandy river." In Washington's will, written in 1799, he refers to the burning spring in an inventory of his lands on the Great Kanawha as follows: "Burning Spring, 125 acres. The tract of which the 125 acres is a moiety was taken up by General Andrew Lewis and myself on account of a bituminous spring which it contains, of so inflammable a nature as to burn as freely as spirits, and is as nearly difficult to extinguish."

Pennsylvania is to-day and has always been the largest consumer of natural gas of all the States, the most of which it has itself produced. In 1906 the whole country produced natural gas of the estimated value of \$46,873,932, of which the product of Pennsylvania was valued at \$18,558,245, West Virginia coming next with \$13,735,343. A large part of the annual product of West Virginia is consumed in Pennsylvania.

Pennsylvania has lost its supremacy in the production of petroleum, as has been shown in the chapter relating to the great industries of Pennsylvania. It has also lost its early prominence in the manufacture of salt, also an industry of Western Pennsylvania. Major S. S. Jamison, of Saltsburg, Indiana county, who died in 1887 in his 80th year, says in his reminiscences: "In the early days, say from 1800 up to 1812, all the iron, salt, etc., to supply the wants of the people of this county was brought from the East on pack-horses. In the fall of the year they would start east, each man with three horses and pack-saddles loaded with linen, cloth, flax, etc., and return with iron and salt. The latter was purchased at McConnellsburg, Pennsylvania, and Hagerstown, Maryland, and the former at different places."

Egle's *History of Pennsylvania* contains the following account of the discovery of salt in Western Pennsylvania: "About the year 1812 or 1813 an old lady named Deemer discovered an oozing of salt water at low-water mark on the Indiana side of the Conemaugh river, about two miles above the present site of Saltsburg. Prompted by curiosity she gathered some of the water to use for cooking purposes, and with a portion of it made mush, which she found to be quite palatable. About the year 1813 William Johnson, an enterprising young man from Franklin county, commenced boring a well at the spot where Mrs. Deemer made the discovery, and at the depth of 287 feet found an abundance of salt water. The salt sold at \$5 per bushel, retail, but as the wells multiplied the price came down to \$4. Seven wells along the river on the Westmoreland side were all put down prior to 1820 and 1822; and from that date till 1830 the group of hills on both sides of the river was like a great beehive."

In the sketch from which the above extract is taken 21 salt works, embracing 24 wells, are enumerated as having once been in operation on the Conemaugh river, in Westmoreland and Indiana counties, all of which works, except three, had been abandoned in 1876. The manufacture of salt was actively carried on in Westmoreland, Indiana, Armstrong, and Erie counties in 1820. In 1826

there were 35 salt works on the Conemaugh and Kiskiminitas rivers, 3 on the Allegheny, and others in progress elsewhere. In 1840 Allegheny, Beaver, Butler, Fayette, and McKean counties manufactured salt in addition to the counties named above, except Erie, which had then dropped out of the business. The salt industry in Pennsylvania reached its culmination in 1860. Since 1889 it has been confined to one works in Allegheny City. It may be classed among the lost industries of Pennsylvania.

In 1811 salt works were erected on Sinnemahoning creek, probably in the present county of Cameron. A handbill announced in 1811 that "considerable quantities of salt have been already manufactured." In 1820 John Mitchell, of Bellefonte, bored a salt well in Karthaus township, Clearfield county, and made considerable quantities of salt for several years. Salt has been found in Susquehanna, Tioga, Cambria, and a few other counties.

Prior to 1796 all the salt used in Western Pennsylvania was imported and packed or hauled from eastern cities. In that year General James O'Hara, of Pittsburgh, opened communication with the Onondaga salt works in New York, and he continued to supply Pittsburgh and Western Pennsylvania with salt down to the discovery of salt in the Conemaugh valley. But until Western Pennsylvania began to make its own salt much of the salt used by the pioneers was obtained in eastern markets. The charter for at least one of the early turnpikes leading to Pittsburgh stipulated that west-bound wagons hauling salt should not be subject to the payment of toll.

In the first half of the nineteenth century Juniata iron, Pittsburgh coal, iron, and glass, Conemaugh salt, and Allegheny lumber were important factors in the development of Western Pennsylvania, aided by favorable transportation facilities, but in the second half of that century Juniata iron and Conemaugh salt virtually disappeared from the markets and in their place there was developed the petroleum trade, the widespread use of natural gas, and the general substitution of steel for iron. To-day Western Pennsylvania is noted for its immense production of pig iron and steel, bituminous coal, and coke.

CHAPTER XXIV.

INDUSTRIES CREATED BY PENNSYLVANIANS.

ALTHOUGH successful experiments in the manufacture of tinplates had been made in this country before 1890 most of them had been abandoned because tariff duties were too low. The manufacture of tinplates and terne plates was not established until the tariff of 1890 increased the duty on both these products from one cent to two and two-tenths cents per pound. The new duty did not take effect, however, until July 1, 1891, but our manufacturers a year before confidently looked for only favorable results. Pennsylvania early took advantage of the new tariff legislation in supplying the country's general market with tinplates and terne plates; indeed this legislation could not have been secured at the time it was enacted, if ever, but for the work of Pennsylvanians in creating a public sentiment in its favor. The United States Iron and Tin Plate Company, of Allegheny county, was the first to engage in the manufacture of tinplates in 1890. Early in that year, anticipating the passage of the bill enacting the new duty, this company, led by one of its members, Mr. W. C. Cronmeyer, who had been active in advocating the new duty, commenced the manufacture of tinplates of the best quality from sheets of its own make, and before the year closed the company had manufactured and sold about fifty tons of tinplates. This company continued to manufacture tinplates of a superior quality as a regular product. In the same year and in the following year other companies in Pennsylvania actively engaged in the manufacture of tinplates and terne plates. In the census year 1904 the whole country produced 387,289 tons of tinplates, valued at \$28,429,971, of which Pennsylvania produced 234,333 tons, valued at \$16,547,120, and in the same year the country produced 70,919 tons of terne plates, valued at \$6,119,572, of which Pennsylvania produced 26,202 tons, valued at \$2,381,277. No later census

statistics are available at this time, but it is certain that Pennsylvania's leadership in the production of both tin-plates and terne plates has been greatly strengthened in the intervening years.

The manufacture in this country of armor plate and other heavy forgings for naval vessels is exclusively confined to Pennsylvania. Down to 1904 there had been established only two armor plate works, one at South Bethlehem and the other at Homestead, the first by the Bethlehem Iron Company and the other by the firm of Carnegie, Phipps & Co., Limited, afterwards the Carnegie Steel Company, but in the year mentioned the Midvale Steel Company, of Philadelphia, began the manufacture of armor plate. The conception of the project to establish the Bethlehem armor plant, the pioneer plant, originated with Joseph Wharton, the leading stockholder in the Bethlehem Iron Company, the builder and successful manager of the plant being John Fritz, the chief engineer and general superintendent of all the company's works. The first contract for armor with the Bethlehem Iron Company was made by the Navy Department on June 1, 1887, and the first contract for armor with Carnegie, Phipps & Co. was made by the Department on November 20, 1890. The armor plate industry of this country, both in magnitude and in the character of its products, embodies the highest achievements of American metallurgical skill, and we owe it all to the enterprise and skill of Pennsylvanians. The American navy would have made but a sorry display in our recent war with Spain if the demand for armor for the "new navy" had not been fully met by the Bethlehem and the Carnegie companies.

Spelter, as crude metallic zinc is called, had never before 1859 been produced in the United States upon such conditions as to encourage the hope that its manufacture would become a staple industry. In 1856 the Lehigh Zinc Company, of South Bethlehem, Pennsylvania, built a spelter furnace of the Silesian type at its zinc mine near Friedensville, four miles south of Bethlehem, but this furnace did not yield any zinc. Samuel Wetherill, the patentee of valuable improvements in the manufacture of zinc oxide,

also experimented at South Bethlehem in the production of metallic zinc and produced a small quantity as early as 1858, but, although he persevered for about two years, and made in all about fifty tons of excellent spelter, the cost of production was too high and his enterprise was abandoned. The first sheet zinc made in this country was rolled by Alan Wood & Sons, of Philadelphia, from an ingot of Mr. Wetherill's spelter. In 1859 Joseph Wharton, of Philadelphia, built for the Lehigh Zinc Company, with which he had been associated since 1851 as stockholder and afterwards as manager, a Belgian spelter furnace of about 45 retorts, which he operated with the aid of several workmen imported for the purpose. The fuel used was Pennsylvania anthracite, and the ore was obtained from the Lehigh Zinc Company's mine near Friedensville. The spelter produced amounted to 34,063 pounds. This successful enterprise of Mr. Wharton was the beginning of the manufacture of metallic zinc in this country as a commercial product. Immediately after this successful experiment Mr. Wharton built at his own risk at the works of the Lehigh Zinc Company a complete spelter plant of 16 Belgian furnaces, which he operated for his own account under lease from the company with absolutely unbroken success until 1863, when he retired from the business.

Mr. Wharton is also entitled to credit as the pioneer in the manufacture of refined nickel. In 1864 he purchased the abandoned Gap nickel mine in Lancaster county, Pennsylvania, and from its ores made metallic nickel and nickel-copper alloy at works he had erected at Camden, New Jersey. In 1876 he produced pure malleable nickel which he made into various useful articles, being the first person in the world to accomplish this result. For many years he was the only producer of refined nickel in this country, his Gap mine, although now virtually exhausted, being for a quarter of a century the only nickel mine in operation on the American continent. Practically all the nickel that is now made in the United States is obtained from nickel matte produced in Canada. Mr. Wharton's enterprise gave to the Government a cheap supply of nickel that was essential to its nickel coinage, and he gave to

the whole country an abundant supply of a metal then much needed for making German silver as well as for coinage, and which is now imperatively needed in much larger quantities for making the nickel steel so largely used for armor plates, gun forgings, etc.

An enterprising Pennsylvanian, Dr. Curtis G. Hussey, of Pittsburgh, who is referred to in a preceding chapter, was the first person to develop the rich copper deposits of the Lake Superior region and afterwards to produce ingots of copper from the ore and sheets of copper from ingots. We condense from the *Magazine of Western History* for 1892 the following circumstantial account of Dr. Hussey's enterprise. It says: "Dr. C. G. Hussey, of Pittsburgh, was the pioneer in opening the first copper mine on Lake Superior and also in the erection of the first works for smelting Lake Superior copper, and he built the first copper mill west of the Alleghenies. In 1843 he sent John Hays into the far-away region to see what discoveries he could make. During his exploring tour Mr. Hays purchased for Dr. Hussey a one-sixth interest in the first three permits ever granted by the United States for mining in that region. They had been taken out originally by Messrs. Talmage and Raymond, of New York, and Mr. Ansley, of Dubuque, Iowa, each one-third. Thomas M. Howe, of Pittsburgh, afterwards a member of Congress, purchased a part of this one-sixth interest. Later in 1843 other purchases were made by Dr. Hussey and his friends, giving them a controlling interest. The permits covered three miles square, the first being located at Copper Harbor, the second at Eagle River, and the third some three miles west of the second, but, being off the copper belt, was never worked.

"In the winter of 1843-4 the Pittsburgh and Boston Mining Company was organized, and in the spring of 1844 it sent Mr. Hays into its newly acquired territory, accompanied by a competent geologist and a small party of miners, who prosecuted mining at Copper Harbor until autumn. Dr. Hussey made his own first visit to that region in July to September of the same year. He landed at Copper Harbor. The next year further explorations

were made and mining operations were transferred from Copper Harbor to Eagle River, where a wonderfully rich vein of mass copper was discovered and which soon became known as the Cliff mine. The Pittsburgh and Boston Mining Company thus opened the first mine in the copper region, and it was the first to demonstrate that the metal could be procured in paying quantities. This mine, the famous Cliff, cost its owners, in assessments, \$110,000 and paid them in dividends \$2,280,000 before it gave out. A large proportion of the copper in the Cliff mine was found in huge masses. The transfers at Sault Ste. Marie were slow, laborious, and expensive until the opening of the great Soo Canal in June, 1855.

"The first president of the company, upon its organization in 1844, was the Rev. Charles Avery, of Pittsburgh, who retained the office until his death on January 17, 1858. Dr. Hussey was then elected to the position and held it until the final winding up. The Hon. Thomas M. Howe was the secretary and treasurer until his death on July 20, 1877. Active mining operations ceased in 1870, the property was all disposed of within the next few years, and the affairs of the company were entirely closed up by a final distribution of assets in 1879.

"Much difficulty was at first experienced in securing the smelting of such large masses of copper, none of the existing copper furnaces in the country being adapted to work of this character. It occurred to Dr. Hussey that a furnace could be built with a movable top, and this proved to be a simple solution of the whole difficulty. In 1848 he erected a reverberatory furnace at Pittsburgh. The cover was lifted to one side, the masses were hoisted by a crane and let down into their bed upon the bottom, the cover was replaced, and the thing was done. The first ingots cast were in every respect as good as those now made. The next thing to be done was to erect a mill to roll the ingots into sheets, and a mill for this purpose was built at Pittsburgh in 1849 and 1850, and on July 1, 1850, copper rolling was commenced. In both the enterprises at Pittsburgh Mr. Howe was Dr. Hussey's partner, the firm name being C. G. Hussey & Co."

In Mr. Williams's biographical sketch of Peter White, (1907,) which gives an account of the important part taken by John Hays in the development of the Lake Superior copper region, the specific statement is made that Mr. Hays discovered the Cliff mine on November 18, 1844.

One of the newest and most interesting industries of this country is the manufacture of aluminum, a metal used in the production of domestic and other articles, machinery included, which combine lightness with strength; as an alloy with steel and other metals; and also for the transmission of electric currents as a substitute for copper. Fifty years ago aluminum was a chemical curiosity. Soon afterwards small quantities were produced in Europe for commercial purposes by various processes, but the production abroad did not enter largely into the arts until after the manufacture of aluminum on a large scale was developed in the United States through the invention in 1886 of the electrolytic process by Charles M. Hall, a native of Thompson, Geauga county, Ohio. This process is now in universal use and it is exclusively used in this country. In a report of the United States Geological Survey for 1892 the statement was made that "practically all the pure aluminum which has been made in the United States has been made in accordance with the electrolytic process covered by Hall's patents." Mr. Hall's process has so reduced the cost of aluminum that the metal is now in common use. The production in the United States in 1883, before Mr. Hall's invention, was only 83 pounds, a purely laboratory product, but in 1903 it amounted to 7,500,000 pounds. In 1906 the consumption of aluminum in the United States was 14,910,000 pounds and in 1907 it was 17,211,000 pounds.

In August, 1888, the Pittsburgh Reduction Company was organized solely to manufacture aluminum under Mr. Hall's patents, and works for this purpose were built in that year at Pittsburgh and put in operation in November. The name of the company has been changed to the Aluminum Company of America. It is the only company in the United States that is engaged in the manufacture of aluminum. The works at Pittsburgh were lo-

cated on Smallman street, between 32d and 33d streets. In 1890 these works were greatly enlarged and in the following year they were moved to New Kensington, a suburb of Pittsburgh, and were again enlarged in 1893. They are still in active operation. This plant was still further enlarged in 1907. Other works now operated by the company are located at Niagara Falls, at Massena in St. Lawrence county, New York, and at Shawinigan Falls in the Province of Quebec. The first works at Niagara Falls were started in 1895 and in 1896 they were enlarged and new works were built.

Alumina made from Greenland cryolite was at first used by the Pittsburgh Reduction Company in the manufacture of aluminum, but very soon bauxite from Alabama and Georgia was substituted and its use has produced the best results. The bauxite is to-day purified at works at East St. Louis, Illinois, owned by the Aluminum Company of America, and thence taken to the various manufacturing plants of the company and converted into pig aluminum. In 1896 the manufacture of pig aluminum at New Kensington was abandoned. The works at that place have since been devoted to converting pig aluminum into more or less finished forms.

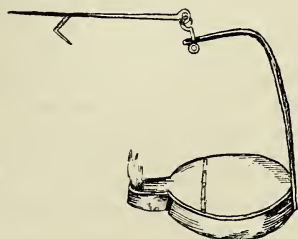
The first president of the Pittsburgh Reduction Company was the widely-known Pittsburgh engineer, Captain Alfred E. Hunt, who remained its president until his death in 1899. The original capital subscribed was Pittsburgh capital and the business was entirely a Pittsburgh enterprise. Mr. Hall went to Pittsburgh in 1888, when the company was organized, and he has been identified with it ever since, at present as vice president. Since Captain Hunt's death R. B. Mellon, the well-known banker of Pittsburgh, has been president of the company, and Arthur V. Davis, its secretary and general manager, has been its active executive head. The original capital was \$20,000, but the present capital is \$3,800,000.

When first put on the market aluminum was used only in the manufacture of optical instruments, dental plates, and similar light articles. In 1890 the manufacture of aluminum cooking utensils was commenced. One of the

earlier uses of aluminum was as an alloy in the manufacture of steel, aluminum being added to the extent of one-tenth of one per cent., or less, to remove the dissolved gases and make the steel solid both for castings and for steel plates. It is so used to-day.

Prior to Mr. Hall's invention in 1886 the price of imported aluminum in our markets was not less than \$15 per pound. In 1888, when the works of the Pittsburgh Reduction Company were started, the price of imported aluminum dropped to \$4 per pound. A short time previously the price had been \$7 and \$8 per pound. The Pittsburgh Reduction Company soon reduced the price of aluminum to \$2 per pound, and in 1893 the price ranged from 65 to 75 cents per pound. In the early part of 1907 it was 36 cents and early in 1908 it was 33 cents.

The establishment of the aluminum industry in this country twenty years ago by the Pittsburgh Reduction Company has not only given to our country a new and useful industry, but, as has been shown above, it has greatly reduced the price of aluminum to consumers, again illustrating the truth which has been so often emphasized that prices of manufactured products always fall when we cease to be dependent on foreigners for their supply. The manufacture of aluminum is to-day one of the important and necessary industries of this country, and for its existence we are indebted first to Charles M. Hall, the inventor of the electrolytic process, next to the engineering skill and executive ability of Captain Alfred E. Hunt, and lastly to the good management of Arthur V. Davis.



CHAPTER XXV.

EARLY CHAIN AND WIRE BRIDGES.

WESTERN PENNSYLVANIA is entitled to the honor of having introduced the chain suspension bridge into our country, and at a time when it was largely an unsettled frontier part of the State. A chain bridge across Jacob's creek, which forms part of the boundary between Fayette and Westmoreland counties, was described in *The Farmers Register*, of Greensburg, Westmoreland county, on May 22, 1802, as follows, under the caption, "Iron Bridge."

The bridge which Judge Finley (near this place) had undertaken to erect across Jacob's creek, at the expense of Fayette and Westmoreland counties, near Judge Mason's, on the great road leading from Uniontown to Greensburg, is now completed. Its construction is on principles entirely new, and is perhaps the only one of the kind in the world. It is solely supported by two iron chains, extended over four piers, 14 feet higher than the bridge, fastened in the ground at the ends, describing a curve line, touching the level of the bridge in the centre. The first tier of joists are hung to the chains by iron pendants or stirrups of different lengths, so as to form a level of the whole. The bridge is of 70 feet span and 13 feet wide; the chains are of an inch square bar, in links from five to ten feet long; but so that there is a joint where each pendant must bear. The projector has made many experiments to ascertain the real strength of iron, and asserts that an inch square bar of tolerable iron in this position will bear between 30 and 40 tons; and, of course, less than one-eighth part of the iron employed in this bridge would be sufficient to bear the net weight thereof, being about 12 or 13 tons.

Mr. Finley embarked in this business at his own risque and engaged that the work would endure at least 50 years, (except what should be necessary for repairs of flooring,) for the moderate sum of 600 dollars. He farther observes that a bridge of the same width and 280 feet span would be about 50 tons weight; the chains double as strong as the foregoing. The whole of the iron required would then amount to six tons, and say the smith work to half its value. The piers 46 feet eight inches high. These chains so placed would support 240 tons; deduct its own weight of timber, and so much of the iron as falls between the piers, say 53 tons; remainder, 237 tons. Should any startle at the expense let them be informed of the bridge at the falls of the Potomack, which is but of 140 feet span, and is said to have cost at least 50,000 dollars, and materials entirely of timber, and therefore subjected to but a temporary duration.

Mr. Finley was an associate judge of Fayette county. He died in 1828. The chain bridge over Jacob's creek was built by him in 1801 and it was the first of its kind

in this country, but it was not the first in the world. Chain bridges are said to have been used at an early day in China. Charles Bender says that in 1734 "the army of the Palatinate of Saxony, in Germany, built a chain bridge across the Oder river, near Glorywitz, in Prussia." In Johnson's *Cyclopædia* it is stated that "in 1741 the first European chain bridge was built in England across the Tees. It was a rude work, attracting no attention at the time, and not until 1814 did English engineers apply themselves to their construction." In the meantime Judge Finley built the Jacob's creek bridge and it was followed by others in this country which were built on his plans. In 1808 James Finley, as stated by Thomas Pope, took out a patent for a "patent chain bridge."

In the *Port Folio* for June, 1810; printed in Philadelphia, there is a description of several chain bridges which had been built in this country at that time on Judge Finley's plans, one the Jacob's creek bridge, another at the Falls of Schuylkill above Philadelphia, another at Cumberland, Maryland, another over the Potomac above Georgetown, Maryland, replacing the wooden bridge above referred to, another over the Brandywine at Wilmington, Delaware, another at Brownsville, Fayette county, Pennsylvania, and another near the same place. Still another chain bridge, over the Merrimac, at Newburyport, Massachusetts, was built in 1810, making eight in all. In 1811 several other chain bridges are mentioned, one of which was over the Neshaminy, in Bucks county, Pennsylvania, and another over the Lehigh at Easton. At a later date a chain bridge was built over the Lehigh at Lehigh Gap. This bridge is still standing.

The chain bridge across the Tees, which was built in 1741, remained in use over 80 years. Like the Jacob's creek bridge its span was 70 feet. It was a foot-bridge.

In April, 1811, there was printed at Uniontown, Pennsylvania, by William Campbell, *A Description of the Chain Bridge, invented by Judge Finley, of Fayette county, Pennsylvania, with Data and Remarks, etc.*, in which Judge Finley claims that he built the bridge over Jacob's creek in 1801 "on a contract with Fayette and Westmoreland

counties for the consideration of \$600," and that "the exclusive right was secured by patent in the year 1808." He says: "There are eight of these bridges erected now," which he describes substantially as mentioned above in the *Port Folio*.

The chain bridge above Georgetown was swept away by a freshet probably in 1839 and has since been replaced by various structures of other designs, but the name, "chain bridge," is still retained. It became famous during our civil war. The Jacob's creek chain bridge broke down under the weight of a six-horse team about 1825 but was repaired and again used. This bridge was torn down several years ago and an iron truss bridge was erected in its stead.

The chain bridge over the Merrimac at Newburyport is still standing and in use. It was built in 1810. A letter from A. K. Mosley, civil engineer, informs us that it is "substantially intact as originally constructed." In the *New England Magazine* for January, 1905, there appears an illustration of this bridge, drawn by Mr. Mosley. In 1900 or 1901 it was partly rebuilt by the Roeblings.

Chain suspension bridges have been built in recent years. At Budapest there are now two chain suspension bridges over the Danube, one of which, with a main span of 931 feet, has only recently been completed. There is a chain bridge over the River Dnieper, at Kieff, in Russia. In this country a notable chain bridge was built over the Monongahela at Pittsburgh as late as 1876, and is still in use as originally built. It is known as the Point Bridge. It has a span 800 feet long. The links of the chains which support this bridge are 2 inches thick, 8 inches wide, and from 20 to 25 feet long.

Wire suspension bridges are of more modern origin than chain bridges and are in general use, especially in the United States. A small wire suspension bridge was built over the Schuylkill at Philadelphia in 1816 by White & Hazard with wire made at their wire works at the Falls of Schuylkill. This bridge was used only for foot passengers. Charles Ellet, Jr., a distinguished American engineer, born at Penn's Manor, in Bucks county, Penn-

sylvania, in 1810, is credited with the introduction in this country of wire bridges of general utility. In 1842 he built a wire cable suspension bridge over the Schuylkill at Fairmount, which was the first noteworthy wire suspension bridge in this country. General J. G. Barnard says that "he shares with Roebling the honor of being a pioneer of wire suspension bridges." The earliest European wire suspension bridge of which we have found any mention is the bridge at Fribourg, in Switzerland, which was completed in 1834. This bridge has a span of 870 feet and is suspended at a height of 167 feet above the water. It is supported on cables of iron wire. Wire rope was in use in the Hartz mines, in Germany, in 1831. It can be justly claimed that the wire suspension bridge as we see it to-day is to all intents and purposes the work of American engineers.

John Augustus Roebling will always be regarded as the greatest of all American bridge engineers. If he did not absolutely invent the wire suspension bridge he was certainly its most earnest and intelligent advocate and its most skillful builder. The Brooklyn Bridge, which he planned but which after his death was built by his illustrious son, Washington A. Roebling, is not his only monument. The Niagara and other wire suspension bridges which were built after his plans and under his direction need not be referred to in detail in these pages, but they may well contain a brief notice of the man himself.

Mr. Roebling was a native of Mühlhausen, Prussia, in which city he was born on June 12, 1806. After the ordinary high school course he attended the mathematical institute of the celebrated Dr. Unger, at Erfurt, in Germany, for two years. Then he went to the Royal University at Berlin and graduated with high honors after a three years' course, mostly in engineering branches, followed by a special course in architecture. After spending two years in Westphalia as an engineer in the government service he concluded to emigrate to this country, and in 1829 or 1830 he led a small colony of Germans to Western Pennsylvania and founded the town of Sax-onburg, in Butler county. He soon found employment as

an engineer in various canal and railroad enterprises. At Saxonburg he established the first wire-rope works in the United States, borrowing the money to pay for the wire, for which he was charged 21 cents a pound. His first wire rope was made on a rope-walk, not on a machine. Mr. Roebling was induced to engage in the manufacture of wire rope as a substitute for hempen ropes on the inclined planes of the Portage Railroad, to which episode in his life we will presently refer. The details which follow have been given to us by Washington A. Roebling.

The success of the Portage Railroad alterations led to similar improvements by my father on the Morris Canal in New Jersey, where 22 inclined planes were adapted to the use of wire rope, very large ones at that, being $2\frac{1}{4}$ inches in diameter. These were followed later on by the introduction of wire rope on the planes of the Delaware and Hudson Canal Company and the Pennsylvania Coal Company. The general use of wire rope was a matter of very slow growth.

The manufacture of wire rope gave my father a thorough knowledge of the strength and qualities of iron wire and its various capabilities. When, therefore, in the year 1844 it became necessary to rebuild the wooden arch aqueduct of the Pennsylvania Canal across the Allegheny river at Pittsburgh he made the startling proposition of replacing it by a wire suspension aqueduct. This called forth a storm of violent opposition. He finally obtained a contract to build the aqueduct in the short space of six months in the winter season. This comprised removal of the old structure, rebuilding five piers in a rapid stream, building two new anchorages, spinning a pair of long cables, and suspending the wooden trunk. It was completed in time. He cleared \$3,500, which was afterwards lost by the failure of a bank where it was deposited.

In 1846 my father built the Monongahela Suspension Bridge at Pittsburgh without any assistant. Next followed four suspension aqueducts on the line of the Delaware and Hudson Canal, all winter work, lasting three seasons. In 1849 an injury to his left arm made his left hand practically useless. With this handicap he accomplished some of his greatest works. With all this external activity he still found time, or made time, to attend to his wire-rope business, which he removed from Saxonburg to Trenton in 1849 and much enlarged by adding a wire-drawing department and a rolling mill, all constructed on his own plans. The Niagara Railway Suspension Bridge, now replaced by a double-track steel arch, was opened to travel in 1854, over fifty years ago. All the designing, calculating, drafting, and superintending was done by Mr. Roebling personally.

At the Allegheny Bridge at Pittsburgh I was my father's only assistant, having just left college, but he did all the designing and vital parts of the work. On the Cincinnati Bridge I was again his principal assistant, the close of the civil war giving me liberty to take the position. Here again he did all the designing and superintending, the bridge being built by day's work. As regards the Brooklyn Bridge I can say that he made the original designs, with perhaps a little assistance from myself and Mr. Hildenbrand. In the construction of the bridge the design was, however,

considerably modified, and might perhaps have been changed to even more advantage. This is inevitable where conditions are rapidly changing and demands are constantly increasing. My father died from an accident on July 22, 1869, before actual work was begun, and it remained for me to make it an accomplished fact by fourteen years of hard work.

The building of the wire aqueduct over the Allegheny river at Pittsburgh by Mr. Roebling, "the designer and contractor," as stated by the *American Rail Road Journal* in 1845, was contracted for by the city of Pittsburgh, under an agreement with the State authorities. The *Journal* makes this prophetic statement: "This system, for the first time successfully carried out on the Pittsburgh aqueduct, may hereafter be applied with the happiest results to railroad bridges, which have to resist the powerful weight and great vibrations which result from the passage of heavy locomotives and trains of cars." The contract price for the aqueduct was \$62,000.

The Hon. James Potts, of Johnstown, Pennsylvania, was for many years, beginning with 1839, the collector of tolls on the Pennsylvania Canal and Portage Railroad, his office being located at Johnstown, where the western division of the canal ended and the railroad commenced, the latter terminating at Hollidaysburg. It had ten inclined planes, operated by stationary engines. On the 9th of September, 1886, the "old boatmen" on the western division of the canal held a reunion at Nineveh, near Johnstown, at which Judge Potts delivered an address, of which the following incident in the life of John A. Roebling formed a part. Judge Potts was a native of Butler county and had long known Mr. Roebling.

The late John A. Roebling, one of the most distinguished civil engineers and scientists of his day, conceived the idea of spanning the largest rivers with bridges supported by wire cables. To that end he directed the labor of his life. He established a wire rope works on a small scale at Sax-onburg, in Butler county, and by special grace he got permission from the Canal Board in 1842 or 1843 to put a wire cable on Plane No. 3. It was put on in the fall of the year. The manufacturer of the hempen ropes in Pittsburgh, backed by a powerful political and interested influence, endeavored to prevent the introduction of the wire cable. The superintendent and employes on the road partook of that opposition. If the wire cable was a success it would supersede the profitable hempen-rope industry. The cable, however, was put on the plane, and in a few days one of the attachés cut the cable in two. Mr. Roebling found his cable stretched on the plane—condemned. He came to the collector's office and asked

an interview with me in the parlor. He stated with the tears of grief, if not of agony, that he was a ruined man. The labor of his life, the hope of his fame and fortune, were lost forever. His cable was condemned by the great Commonwealth of Pennsylvania. It was condemned, not because it was worthless, but because it would supersede the hempen rope. "Can not you do something for me?" he asked. "Why, Mr. Roebling, I would do anything in the world for you, but what can I do?" "You have influence with the Canal Board, and, perhaps, you can get me another opportunity to test my cable."

Just at that moment there was a rap at the door, and, in answer to the call, who stepped in but John B. Butler, the President of the Board of Canal Commissioners, and, after the usual salutation, I said to Mr. Roebling, "Just state your case to Mr. Butler." Mr. Roebling stated his case in very few words, for he was a man of few words. Mr. Butler listened attentively until he got through, when he said: "Roebling, have you confidence in your cable?" The answer was, "I have, sir." "Then," said Mr. Butler, "I now appoint you superintendent of Plane No. 3, with the credit of the Commonwealth for all the material you may need; superintendent of the depots at Johnstown and Hollidaysburg for all the machinery you may want; the appointment of all such mechanics and laborers as you may require in the reconstruction of the plane—all this at the expense of the Commonwealth. You will commence immediately after the close of navigation and have everything necessary for the spring business. You will superintend the plane yourself for the first month, and if your cable is a success we will put it on all the planes on the road, *and this is all I can do for you.*" Mr. Roebling did not burst forth in the usual laudation of thanks, of God bless you and prosper you, etc.; but this time, with tears of joy rolling down his cheeks, his only reply was, "*God is good!*" I shall never forget the reply. He gave thanks to that Source from whom all blessings flow. He left with a joyful heart and greatly encouraged. The plane was reconstructed, ready for the spring business. The cable worked like a charm.

During that summer wire cables were put on all the planes. By these planes Mr. Roebling had an opportunity of testing the flexibility and strength of his cables. The heavy weight of cars and section boats on those cables gave them a fair test of strength and durability. I mention this fact to show that the planes on the Portage Railroad were the means of the wonderful enterprise of wire-cable bridges, for Mr. Roebling frequently told me since that, had it not been for the interview in my parlor and the authority he got there to reconstruct a plane to establish and test the virtue of his wire cable, he never would have attempted it again, being condemned by the Commonwealth. So the old Portage is entitled to the credit of all these great wire bridges, notably the Brooklyn Bridge.

It was in Western Pennsylvania that the first chain suspension bridge in this country was built, and Judge Finley, who built it, introduced it in other parts of the country. It was also in Western Pennsylvania that the first wire-rope factory in the country was established by John A. Roebling, who also, more than any other man, promoted the building of wire suspension bridges.

CHAPTER XXVI.

THE EARLY HISTORY OF PITTSBURGH.

THE prominence which Pittsburgh has attained as the centre of the iron and steel, bituminous coal, and glass industries of our country, and as the centre of the world's iron and steel industries, naturally leads to a condensed account in this volume of its early history and of the notable part which Washington bore in shaping that history. The dates and other details that we shall give have been verified from trustworthy sources.

The selection of the forks of the Ohio, formed by the junction of the Monongahela and the Allegheny rivers, as a suitable place for the erection of a fort was made in 1753 by George Washington for the mutual benefit of the Ohio Company and the colony of Virginia, which latter Washington directly and officially represented. This selection was made at a time when Virginia claimed jurisdiction over Western Pennsylvania, and when this claim received entirely too little consideration from the provincial authorities of Pennsylvania. The Ohio Company was composed chiefly of Virginians, and of this company both Lawrence and Augustine Washington, half brothers of George Washington, were members. The company was organized to engage in trade with the Indians west of the Alleghenies and to secure valuable grants of land. It received the encouragement and support of the English and Virginia authorities because the territory it expected to occupy was claimed as a part of Virginia. In November of the year above mentioned Washington visited the forks of the Ohio while serving as a commissioner from Governor Dinwiddie, of Virginia, to the French commandant in Northwestern Pennsylvania, the French at that time claiming jurisdiction over the Ohio and Mississippi valleys and having established military posts at Presqu' Isle (Erie) and at Le Bœuf, (Waterford.) The object of Washington's visit to the French commandant was to

protest against French encroachments upon Virginia territory. Washington met the commanding officer at Fort Le Bœuf but his visit was fruitless. On his way to this officer Washington, as he says in his journal, "spent some time in viewing the rivers [Monongahela and Allegheny] and the land in the fork, which I think extremely well situated for a fort." The Ohio Company had previously selected a site for a fort on the left bank of the Ohio, two miles below the junction of the Allegheny and the Monongahela rivers, at a place now known as McKees Rocks, but Washington condemned this selection for reasons which are mentioned in his journal. The Ohio Company and the Virginia authorities approved his choice.

Judge Veech describes the Ohio Company as follows: "The Ohio Company was an association formed in Virginia, about the year 1748, under a royal grant. Hitherto the French and Pennsylvanians had enjoyed the trade with the Indians north of the Ohio and around its head waters. The purpose of this company was to divert this trade southward, by the Potomac route, and to settle the country around the head of the Ohio with English colonists from Virginia and Maryland. To this end the king granted to the company 500,000 acres of land west of the mountains, 'to be taken chiefly on the south side of the Ohio, between the Monongahela and Kenhawa, but with privilege to take part of the quantity north of the Ohio, . . . upon condition that the company should, within seven years, seat one hundred families on the lands, build a fort, and maintain a garrison, to protect the settlement.'"

In February, 1754, by direction of the Governor of Virginia, a company of Virginia militia, commanded by Captain William Trent, undertook the erection of a fort in the forks, in aid of the plans of the Ohio Company and to establish the jurisdiction of Virginia, but from this work the militia were driven away in April by a large body of French and Indians. The French immediately began and completed the erection of a fort at the same place, which they called Fort Du Quesne, in honor of the Governor-General of New France, the Marquis Du Quesne de Menneville. The fort was situated on the Monongahela, in the forks.

In the month of April, 1754, Washington was sent by Governor Dinwiddie with a small force of Virginians, which was subsequently increased, to the support of the Virginia militia under Captain Trent, but before reaching Western Pennsylvania he learned that the half-completed fort at the forks of the Ohio had fallen into the hands of the French. Washington pushed on toward the mouth of Redstone creek on the Monongahela river, where he could establish a base of operations against the French and there await reinforcements. A strong force of French and Indians was promptly dispatched from Fort Du Quesne against Washington's small command, intercepting him before he reached his destination. The battle of Great Meadows, in Fayette county, Pennsylvania, about seventy-five miles southeast of Fort Du Quesne, was fought on July 3, 1754, and was followed by Washington's surrender of Fort Necessity about midnight of the same day, his first and only surrender, and by the abandonment of the expedition. At daybreak of July 4 Washington, with his demoralized command, marched out of Fort Necessity toward Will's creek, Maryland, his original base of operations. In 1767 Washington bought a tract of 234 acres in Fayette county which included Great Meadows, and he owned this tract at his death in 1799.

These events mark the beginning of the final struggle between the French and the English for the control of the country west of the Alleghenies.

An ineffectual attempt was made in 1755 by a force of British regulars and provincial troops to drive the French from Fort Du Quesne, which resulted in the defeat of General Braddock near the site of the present Edgar Thomson steel works. Three years afterwards, on November 25, 1758, Fort Du Quesne fell into the hands of the British and their provincial allies under General Forbes, the French blowing up the fort and disappearing, some of them pushing off in their boats down the Ohio and up the Allegheny, while others marched overland to Erie, then known as Presqu' Isle.

Washington was present at Braddock's defeat, as is well known, but he was also present when Fort Du Quesne

fell into the hands of General Forbes in 1758, which is not so well known. In December, 1758, a new fort was built at the forks, and in 1759 and 1760 the construction of a more formidable fortification was commenced and practically completed by General Stanwix, the new fort being named Fort Pitt. This fort was entirely completed by Colonel Bouquet in 1761, who added in 1764 a block-house, or redoubt, which is still standing. The fort was named in honor of William Pitt, the great Earl of Chatham, then the British Secretary of State. It was situated on the Monongahela, above the site of Fort Du Quesne.

It has been a mooted question when Pittsburgh was first so called and when Fort Pitt received its name. In his *Old Pittsburgh Days* Chapman says: "Pittsburgh was so called from the first; for on November 26, 1758, the very day next following the occupation by the English, we find General Forbes dating a letter at Pittsburgh. (See *Colonial Records of Pennsylvania*, vol. viii; p. 232.) Colonel Mercer, in July and September, 1759, dates from Pittsburgh, but makes no mention of Fort Pitt. General Stanwix, on December 8, 1759, dates from 'Camp at Pittsburgh,' and speaks of 'the works here,' but does not mention Fort Pitt. Finally, in a letter bearing date December 24, 1759, Stanwix mentions 'Fort Pitt' in the body of his letter, (*Pennsylvania Archives*, vol. iii; p. 696,) and this is the first mention of the fort by that name. So that not until more than twelve months after the taking of Fort Du Quesne do we hear any mention of Fort Pitt, and then the work afterwards to be known by that name had been carried well on toward completion. Hence it seems clear that the temporary fortification built in the winter of 1758 was known simply as the fort at Pittsburgh, or, as Stanwix termed it, the 'camp at Pittsburgh.'"

To which we may add that in December, 1758, Christian Frederick Post mentions Pittsburgh several times in his second journal but does not once mention Fort Pitt. The settlement at the forks was, however, generally known as Fort Pitt until after the Revolution.

The letter which was written by General Forbes on November 26, 1758, and above referred to by Mr. Chap-

man, was addressed to Governor William Denny, at Philadelphia, and acquainted the Governor with the fact that Fort Du Quesne had fallen into his hands. The letter is dated at "Pittsburg." It does not, however, give any intimation that General Forbes had himself given Pittsburgh its name. In a letter from General Forbes to William Pitt on November 27, 1758, the general dates his letter at "Pittsbourgh." After telling of his victory over the French and of his own illness he says: "I have used the freedom of giving your name to Fort Du Quesne, as I hope it was in some measure the being actuated by your spirits that now makes us masters of the place. Nor could I help using the same freedom in the naming of two other forts that I built, (plans of which I send you,) the one Fort Ligonier and the other Bedford. I hope the name fathers will take them under their protection, in which case these dreary deserts will soon be the richest and most fertile of lands possessed by the British in No. America." This letter may be found in the *Correspondence of William Pitt*, edited by Gertrude Selwyn Kimball, under the auspices of the National Society of Colonial Dames of America, and published by the Macmillan Company in 1906. It is of interest to add that Colonel Bouquet signed the minutes of a conference with the Delaware Indians "at Pitts-Bourgh, December 4, 1758." Also that in February, 1759, an Indian council was held at Philadelphia at which the Indians invariably referred to Pittsburgh and not to Fort Pitt. Bancroft says that Pittsburgh was so named by General Forbes on the day that Fort Du Quesne fell into the hands of the English, on November 25, 1758.

General John Forbes, who drove the French out of Western Pennsylvania and who gave to Pittsburgh its name, was born in Scotland in 1710 and died on March 11, 1759, in Philadelphia, where he was buried in the churchyard of Christ church, less than four months after he had compelled the French to abandon Fort Du Quesne.

In 1763 the conspiracy of the Western Indians under the leadership of Pontiac was formed and a fierce border war ensued, during which Fort Pitt was for many weeks besieged by a large body of Indians and successfully de-

fended by the garrison under command of Captain Ecuyer, a native of Switzerland. While the siege was in progress Colonel Bouquet, also a native of Switzerland, commanding the British and provincial forces in Pennsylvania, Maryland, and Virginia, and whose headquarters were in Philadelphia, moved from Carlisle to the relief of Fort Pitt with about five hundred men in his command. In August the Indians temporarily abandoned the siege of Fort Pitt and attacked Colonel Bouquet's command at Bushy Run, in Westmoreland county, about twenty-five miles east of Pittsburgh, but after an engagement of two days were defeated, with severe loss on both sides. This defeat resulted in raising the siege of Fort Pitt. Sufficient importance has never been attached to the battle of Bushy Run. It was one of the most sanguinary and eventful engagements between the whites and the Indians that was ever fought.

In 1772 Fort Pitt was abandoned by the British and its garrison was withdrawn by General Thomas Gage, the commander of the British forces in America. The fort was subsequently occupied by Continental troops during the Revolution. For some years after the Revolution Fort Pitt was occupied by United States troops for protection against the Indians, but by 1791 it had been entirely abandoned and a large part was torn down in the fall of that year. Late in the same year orders were issued to Major Isaac Craig to build a new fortification at Pittsburgh, and this structure, situated on the left bank of the Allegheny river, about a quarter of a mile above Fort Pitt, and which was called Fort Fayette, was finished and occupied by a garrison in 1792. This fort was used in that year in the initial operations of General Wayne's expedition against the Ohio Indians, and it continued to be occupied by a garrison for several years afterwards, forming one of the frontier forts that were maintained to overawe the Indians. Thomas Ashe, an English traveler, says that a garrison was maintained at Fort Fayette when he visited Pittsburgh in October, 1806. The Allegheny Arsenal, at Pittsburgh, was completed in 1814 and Fort Fayette was abandoned about that time.

Returning to Fort Pitt, it is stated in Craig's *History of Pittsburgh*, in a description of the fort as it existed about 1796 to 1800, that "the ramparts of Fort Pitt were still standing, and a portion of the officers' quarters, a substantial brick building, was used as a malt house." From 1803 to 1806 the Methodists of Pittsburgh were accustomed to hold religious services "in a room of old Fort Pitt," which is supposed to have formed a part of "the officers' quarters" mentioned by Craig. The city of Pittsburgh occupies in part the site of Fort Du Quesne, the French fortification, of Fort Pitt, its British successor, and of Fort Fayette, built by the United States.

As early as 1758 settlers began to gather about Fort Pitt, most of them Indian traders, and in 1760 there were 149 men, women, and children outside the fort. In 1764 lots and streets in the immediate vicinity of the fort, occupying four squares, were laid out. Chapman says: "In 1764, immediately after the siege, Colonel John Campbell laid out that part of Pittsburgh which is bounded by Water street and Second avenue and Ferry and Market streets, comprising four squares. Colonel Campbell's name is of frequent occurrence in the transactions in this locality at that period. Under what authority or instructions he proceeded in laying out the town we do not know, but no doubt his work was fully authorized, as in the subsequent survey and plan of the town it was recognized and adopted." In 1769 the Manor of Pittsburgh was surveyed and reserved by the Penns, the proprietaries of the province. In 1770 Washington visited Pittsburgh while on his way to the Kanawha valley, in the present State of West Virginia. In his journal Washington says: "We lodged in what is called the town, distant about three hundred yards from the fort, at one Semple's, who keeps a very good house of public entertainment. The houses, which are built of logs, and ranged in streets, are on the Monongahela, and I suppose may be about twenty in number and inhabited by Indian traders." In the siege of Fort Pitt, in 1763, the houses which had then been built outside the fort were all burned. Washington describes Fort Pitt as follows: "The fort is built on the

point near the rivers Allegheny and Monongahela, but not so near the pitch of it as Fort Du Quesne stood. The garrison consists of two companies of Royal Irish, commanded by Capt. Edmondson." In 1783, after the treaty of peace, the proprietaries decided to sell the lands within the Manor of Pittsburgh, the first sale being made in January, 1784. In that year the town of Pittsburgh was surveyed into streets, alleys, and lots, and sales of lots were rapidly made. Writing in his journal under date of December 24, 1784, Arthur Lee, a Virginian, says: "Pittsburgh is inhabited almost entirely by Scots and Irish, who live in paltry log houses and are as dirty as in the north of Ireland or even in Scotland." In 1786 Pittsburgh is said to have contained thirty-six log houses, one stone house, one frame house, and five small stores. The town had grown but little since Washington's visit in 1770. Even after 1786 it had a very slow growth.

Down to 1779 Virginia attempted to exercise jurisdiction over that portion of Southwestern Pennsylvania which is now embraced in Allegheny, Washington, Westmoreland, Fayette, and adjoining counties, but in that year commissioners from Virginia and from Pennsylvania agreed to the boundaries between the two States which have since been observed, and in 1780 the agreement was formally ratified by the Legislature of each State. Under the Virginia claim the settlement at Fort Pitt was embraced within the boundaries of Augusta county, Virginia, Staunton being then as now its county-seat. Under the Pennsylvania claim and down to 1788 Pittsburgh was included within the limits of Westmoreland county, its county-seat being at first Hannastown and afterwards Greensburg, but in that year Allegheny county was organized and Pittsburgh became the county-seat.

On April 22, 1794, an act of the Pennsylvania Legislature was passed incorporating the town of Pittsburgh into a borough. In 1796 Pittsburgh had a population of 1,395 and in 1800 the population was only 1,565. In 1810 it had increased to 4,768. On March 18, 1816, the borough of Pittsburgh was erected into a city. In 1830 the population was 12,568, in 1840 it was 21,115, and in

1850 it was 46,601. In 1845 occurred the great fire at Pittsburgh, which destroyed over one thousand dwellings, warehouses, stores, and other buildings, the loss amounting to about six million dollars.

In 1787 the town of Allegheny, opposite Pittsburgh, was "laid out by the order of the sovereign authority of Pennsylvania," with the intention of making it the county-seat of Allegheny county, but this intention was soon abandoned. Allegheny became a borough in 1828 and it was incorporated as a city in 1840. In 1907 it was consolidated with Pittsburgh and lost its municipal independence.

The proprietaries of the province of Pennsylvania were fully aware as early as 1769 of the existence of coal at Pittsburgh. In 1784, the year in which Pittsburgh was surveyed into building lots, the privilege of mining coal in the "great seam" opposite the town was sold by the Penns at the rate of £30 for each mining lot, extending back to the centre of the hill. This event may be regarded as forming the beginning of the coal trade of Pittsburgh. In a few years the supply of the towns on the Ohio and Mississippi rivers with Pittsburgh coal became an established business.

Down to 1845 all the coal that was shipped westward from Pittsburgh was floated down the Ohio in flat-bottomed boats with the spring and fall freshets, each holding about 15,000 bushels of coal. The boats were usually lashed in pairs and were sold and broken up when their destination was reached. In 1845 steam tow-boats were introduced, which towed coal barges down the river and brought them back empty. About 1845 Pittsburgh coal began to be used in Philadelphia, transportation being by way of the Pennsylvania Canal in section-boats, which carried the coal from Pittsburgh to Philadelphia without breaking bulk.

In 1786 the *Pittsburgh Gazette*, the first newspaper published west of the Allegheny mountains, was established at Pittsburgh. The first glass works at Pittsburgh were established in 1797, in which year Craig & O'Hara began the manufacture of window glass on a small scale.

The first steamboat on the western rivers was built at Pittsburgh in 1811 and named the *New Orleans*, but prior to this year many sailing vessels had been built at Pittsburgh for ocean service. The great iron and steel industries of Pittsburgh are described in sufficient detail in earlier chapters of this volume.

In a previous chapter allusion has been made to the decadence within comparatively recent years of the business of building steamboats at Pittsburgh. Other industries which once added to the activity of Pittsburgh and helped to make it prosperous have also declined in importance. Chapman says of the glass industry of Pittsburgh that it has rapidly declined since 1886. He says: "There is still some glass made in Pittsburgh, but it is no longer a characteristic industry of the city. The great centres of this industry have been removed from the city limits and are now at Ford City on the Allegheny river, at Jeannette in Westmoreland county, and at Glassport on the Monongahela river." He says that "ropemaking has ceased as an industry of Pittsburgh" and that "the business of manufacturing cotton goods continued down to a comparatively recent date, but now no enterprise of the kind is carried on in the Pittsburgh district." He adds that "the business was at one time one of the leading industries of the Pittsburgh district." In 1848 there were six cotton mills in this district, all in Allegheny City, making sheeting, ticking, cotton yarn, and cordage. All these mills have been torn down for many years or converted to other uses. Pittsburgh was long foremost in the manufacture of cut nails, but now it makes none. Nevertheless, notwithstanding the decline or total disappearance of some of its once prominent industries, Pittsburgh as an industrial centre is without a rival in this or any other country. The basis of its industrial pre-eminence to-day is its marvelous steel industry.

Some account of the growth in population of Philadelphia and Pittsburgh, the two largest cities in Pennsylvania, may properly close this chapter.

The census gives the population of Philadelphia in 1900 as amounting to 1,293,697, an increase of 23.56 per

cent. over 1890, and the population of Pittsburgh as 321,616, an increase of 34.78 per cent. over 1890. Pittsburgh newspapers say that numerous contiguous suburbs ought to be included in a Greater Pittsburgh, and that, if they were so included, the population of the city to-day would closely approximate three quarters of a million. On November 18, 1907, the Supreme Court of the United States decided that the act of the Pennsylvania Legislature, uniting Allegheny City to Pittsburgh, was constitutional. By this decision the population of Pittsburgh at the close of 1907 was probably 550,000. Philadelphia long ago absorbed virtually all its nearby suburbs—all that are in Philadelphia county. The consolidation took place in 1854.

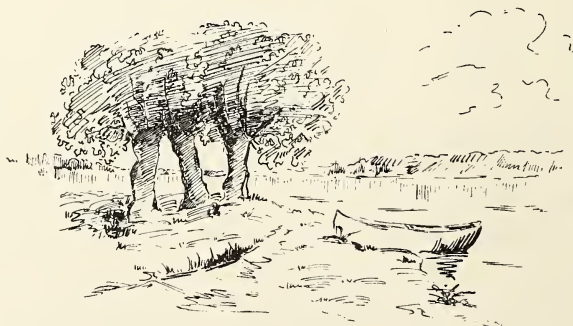
In the following comprehensive table we have made a comparison of the growth in population of Philadelphia county and Allegheny county in the hundred and ten years from 1790 to 1900, the boundaries of Philadelphia county being coterminous with those of the city of Philadelphia, while Allegheny county embraces the city of Pittsburgh. The figures for the eleven decades are as follows:

Years.	Population of Philadelphia county.	Per cent. of increase.	Years.	Population of Allegheny county.	Per cent. of increase.
1790....	54,391	.....	1790....	10,309	.....
1800....	81,009	48.93	1800....	15,087	46.34
1810....	111,210	37.28	1810....	25,317	67.80
1820....	137,097	23.27	1820....	34,921	37.93
1830....	188,797	37.71	1830....	50,552	44.76
1840....	258,037	36.67	1840....	81,235	60.69
1850....	408,762	58.41	1850....	138,290	70.23
1860....	565,529	38.35	1860....	178,831	29.31
1870....	674,022	19.18	1870....	262,204	46.62
1880....	847,170	25.68	1880....	355,869	35.72
1890....	1,046,964	23.58	1890....	551,959	55.10
1900....	1,293,697	23.56	1900....	775,058	40.41

In 1790 the population of Allegheny county was less than one-fifth that of Philadelphia county, but in 1890 it was more than one-half as large as that of Philadelphia county, being 52.72 per cent. as large, and in 1900 it was nearly 60 per cent. as large. In the eleven decennial periods the average decennial increase of the population of Philadelphia county was 33.87 per cent., while that of

Allegheny county was 48.62 per cent. Four times in 110 years Allegheny county increased its population more than 50 per cent. in ten years, but Philadelphia county did this only once. In the last four decades ending with 1900 the progress of Philadelphia county in population has been very slow judged by percentages, while the percentage of increase in the population of Allegheny county has been very rapid, particularly in the decade from 1880 to 1890. The latter's progress in the decade ending with 1900 was, however, notably less than in the preceding decade, judging again by percentages. The absolute increase of population in Philadelphia county in the decade ending with 1900 was 246,733, and that of Allegheny county in the same decade was 223,099.

Pittsburgh owes its early business prominence and prosperity to its location at the head of navigation on the Ohio river, and much of its present prominence is due to the large shipments of coal which annually pass down this river. About sixty years ago railroads began to supersede the Ohio for transportation purposes. At first railroad trains entered and departed from Pittsburgh without inconvenience, as all railroad traffic was light as compared with that of recent years. But with the increase in traffic and the increase of railroad lines and railroad tracks great inconvenience has been experienced in the prompt handling of railroad freight, so that, to avoid the congestion, many iron and steel and other manufacturing enterprises which owe their existence to Pittsburgh capital are located miles away from Pittsburgh.



CHAPTER XXVII.

CHRONOLOGICAL RECORD OF IMPORTANT EVENTS.

WE present herewith a chronological record of leading events in the development of the iron, steel, coal, and other industries of the United States, and particularly of Pennsylvania, from colonial times down to the present time; also of the beginning of canal and railroad building in Pennsylvania and in the United States; also of early iron and steel shipbuilding and of some notable iron and steel bridges built in the United States; also of many other events and achievements that are more or less closely associated with the industrial development of Pennsylvania.

1619—In this year the Virginia Company sent to Virginia a number of persons who were skilled in the manufacture of iron to “set up three iron works” in the colony. The works were located in that year on Falling creek.

1620—In this year, as stated by Beverley in his *History of Virginia*, “an iron work at Falling creek in James river” was set up, “where they made proof of good iron oar.” In this and the following year the enterprise languished. On March 22, 1622, the works were destroyed by the Indians and all the workmen were massacred.

1627—Petroleum was first noticed this year in New York; in Pennsylvania in 1721.

1642—In this year “The Company of Undertakers for the Iron Works” in the province of Massachusetts Bay, consisting of eleven English gentlemen, was organized with a capital of £1,000.

1643—In his *History of Lynn* (1844) Alonzo Lewis says that in 1643 “Mr. John Winthrop, Jr., came from England with workmen and stock to the amount of one thousand pounds for commencing the work. A foundry was erected on the western bank of Saugus river,” at Lynn. This foundry was a small blast furnace, completed in 1645. It was the first successful iron enterprise in the thirteen colonies. Bog ore was used. For a hundred years

after its settlement in 1620 Massachusetts was the chief seat of the iron industry on this continent.

1645—A small iron pot, holding about a quart, which is still preserved at Lynn, was cast at the Lynn foundry in 1645. It was the first iron article made in America.

1664—In this year we read of negro slaves in Delaware, which afterwards became a part of Pennsylvania.

1679—In the *Statistics of Coal*, by Richard Cowling Taylor, published in 1848, it is stated that the earliest historic mention of coal in this country is by the French Jesuit missionary, Father Hennepin, who saw traces of coal on the Illinois river in 1679. In his journal he marks the site of a "cole mine" above Fort Crevecoeur.

1681—Charter of Pennsylvania granted on March 4.

1682—In an account of the province of East Jersey, published by the proprietors in 1682, it is stated that "there is already a smelting furnace and forge set up in this colony, where is made good iron, which is of great benefit to the country." This enterprise was located at Tinton Falls, in Monmouth county, New Jersey. Other authorities definitely establish the fact that the Shrewsbury works, as they were called, were established before 1676. They were, the first iron works in New Jersey.

1683—The first sea-going vessel built in Pennsylvania was the *Amity*, built by William Penn at Philadelphia in this year for the Free Society of Traders. In the same year Penn wrote: "Some vessels have been built here and many boats."

1683—In this year the first glass factory in Pennsylvania was established at Philadelphia. In August, 1683, Penn wrote that "the saw mill for timber and the place of the glass-house are conveniently posted for water-carriage." In March, 1684, Pastorius wrote that "a mill and glass factory are built" at "Franckfurt," now a part of Philadelphia. Both writers probably referred to the same glass factory.

1685—A ferry over the Schuylkill at Market street, Philadelphia, was in operation in this year.

1690—The first paper mill in the colonies was established before this year on a tributary of the Wissahickon,

near Germantown, by Willem Rittinghuysen, the great-grandfather of David Rittenhouse.

1692—In 1692 we find the first mention of iron having been made in Pennsylvania. It is contained in a metrical composition entitled *A Short Description of Pennsylvania*, by Richard Frame, which was printed and sold by William Bradford, in Philadelphia, in 1692. Frame says that at "a certain place about some forty pound" of iron had then been made. This was an experimental enterprise.

1703—Abraham Lincoln's paternal ancestry was identified with the manufacture of iron in Massachusetts. The head of the American branch of his father's family, Samuel Lincoln, emigrated in 1637 from Norwich, England, to Massachusetts. Mordecai Lincoln, son of Samuel, born at Hingham on June 14, 1657, followed the trade of a blacksmith at Hull, from which place he removed to Scituate, where "he built a spacious house and was a large contributor toward the erection of the iron works at Bound Brook" in 1703. These works made wrought iron directly from the ore. Mordecai Lincoln had two sons who settled in Berks county, Pennsylvania, Mordecai, Jr., and Abraham. Mordecai, Jr., was the great-great-grandfather of Abraham Lincoln.

1710—The first slitting mill in the colonies for slitting nail rods is said by tradition to have been erected at Milton, in Norfolk county, Massachusetts, as early as 1710. Nails were made by blacksmiths and others from these nail rods, sometimes on small anvils in chimney corners.

1716—After the failure of the enterprise on Falling creek no successful effort was made to revive the iron industry in Virginia until after the beginning of the succeeding century, when Governor Alexander Spotswood and his associates built a furnace in Spottsylvania county, about ten miles northwest of Fredericksburg, in 1715 or 1716. It was soon followed by other furnaces in Virginia.

1716—The first iron works in Maryland were probably erected in Cecil county, at the head of Chesapeake bay. A bloomary at North East, on North East river, erected a short time previous to 1716, probably formed the pioneer iron enterprise in this colony.

1716—Pool forge, on Manatawny creek, in Berks county, Pennsylvania, was built in 1716 by Thomas Rutter, and was the first iron enterprise in Pennsylvania of which any record has been preserved. Mrs. James, in her *Memorial of Thomas Potts, Junior*, says that Rutter was an English Quaker and a resident of Philadelphia in 1685.

1717—The exportation of bar iron from the American colonies began in this year, when 2 tons were sent to England from the British West India islands of Nevis and St. Christopher, but which had evidently been taken there from one of the Atlantic coast colonies.

1719—In this year the first newspaper in Pennsylvania was established at Philadelphia by Andrew Bradford. It was entitled *The American Weekly Mercury*.

1722—In 1722 Joseph Farmer, an ironmaster, of England, and his associates, afterwards known as the Principio Company, commenced the erection of a furnace on Talbot's manor, in Cecil county, near the mouth of Principio creek, in Maryland, which was finished in 1724 and followed by a forge which was completed in 1725, both works being built and afterwards operated for the company by John England. This company afterwards owned many furnaces in Maryland and Virginia.

1722—Sir William Keith established a forge for the manufacture of bar iron on Christiana creek, in Delaware. It was probably built between 1722 and 1726. It was soon followed by Abbingdon furnace, built about 1727.

1728—In this year James Logan wrote that "there are four furnaces in blast in the colony" of Pennsylvania. Colebrookdale and Durham were two of these furnaces.

1728—Scrivenor says that in 1728-29 there were imported into England from "Carolina" one ton and one cwt. of pig iron, and that in 1734 there were imported two qrs. and twelve lbs. of bar iron. These dates fix the erection of iron works in North Carolina as early as 1728. Hoes made in Virginia and "Carolina" were sold in New York long before the Revolution.

1728—Connecticut was probably the first of the colonies to make steel. In 1728 Samuel Higley, of Simsbury, and Joseph Dewey, of Hebron, in Hartford county, repre-

sented to the Legislature that the first-named had, "with great pains and cost, found out and obtained a curious art, by which to convert, change, or transmute common iron into good steel, sufficient for any use, and was the first that ever performed such an operation in America."

1732—Augustine Washington, the father of George Washington, was engaged in 1732 in making pig iron at Accokeek furnace, in Stafford county, Virginia, about fifteen miles from Fredericksburg, when his famous son was born. This furnace had been built by the Principio Company as early as 1726, on land owned by Augustine Washington, aggregating about 1,600 acres, and containing iron ore, Mr. Washington becoming the owner of one-sixth of the furnace property in consideration of the transfer of his land to the company.

1732—Cornwall iron ore hills first mentioned.

1734—As early as 1734 a bloomary forge was built at Lime Rock, in Litchfield county, Connecticut, by Thomas Lamb, which produced from 500 to 700 pounds of iron per day. A blast furnace was afterwards added to this forge.

1735—In this year Samuel Waldo erected a furnace and foundry on the Pawtuxet river, in Rhode Island, which were afterwards known as Hope furnace.

1740—The first iron works in New York were "set up" a short time prior to 1740 on Ancram creek, in Columbia county, about fourteen miles east of the Hudson river, by Philip Livingston, the father of Philip the signer of the Declaration of Independence.

1750—The iron industry of New Hampshire probably dates from about 1750, when several bog-ore bloomaries were in existence on Lamper Eel river but were soon discontinued. About the time of the Revolution there were a few other bloomaries in operation in New Hampshire.

1750—In 1750 it was officially reported that there was then in Massachusetts "one furnace for making steel."

1750—The first canal constructed in the United States was a short line in Orange county, New York, built by Lieutenant-Governor Colder in 1750 for transporting stone.

1750—The Virginia coal mines were probably the first that were worked in America. Bituminous mines were

opened and operated on the James river, in Chesterfield county, probably about 1750. In July, 1766, in the *Virginia Gazette*, Samuel Duval advertised coal for sale at Rockett's, a lower landing of Richmond, at 12d. per bushel, "equal to Newcastle coal." In 1789 Virginia coal sold in Philadelphia at 1s. 6d. per bushel.

1755—In this year occurred General Braddock's defeat.

1758—The French were driven from Western Pennsylvania in this year by General John Forbes, when Fort Du Quesne, at Pittsburgh, fell into his hands.

1758—Coal was observed at Pittsburgh as early as 1758.

1763—The battle of Bushy Run was fought this year.

1766—Anthracite coal was discovered in the Wyoming valley as early as 1766. It is claimed that in 1768 or 1769 two settlers in the valley, being two brothers named Gore, from Connecticut, blacksmiths, were the first persons in this country to use anthracite coal, using it in a forge fire.

1770—In this year the American colonies exported 6,017 tons of pig iron, valued at \$145,628; 2,463 tons of bar iron, valued at \$178,891; 2 tons of castings, valued at \$158; and 8 tons of wrought iron, valued at \$810.

1773—The first iron works in South Carolina were erected by Mr. Buffington in 1773 but they were destroyed by the Tories during the Revolution. Other iron enterprises were undertaken in this State after the Revolution. In the census year 1840 there were four active furnaces in South Carolina and nine bloomaries, forges, and rolling mills. In 1856 South Carolina had eight furnaces and in the same year it had three small rolling mills. All these enterprises have long been abandoned.

1775—About this year a few bloomaries were erected in Maine and Vermont. A few furnaces were afterwards erected in these States and many bloomaries in Vermont. All have disappeared.

1777—Arnold's *History of the State of Rhode Island* says: "It is said that the first cold cut nail in the world was made in 1777 by Jeremiah Wilkinson, of Cumberland."

1780—In this year an act of the General Assembly of Pennsylvania was passed which provided for the gradual abolition of negro slavery in that State.

1781—Jefferson in his *Notes on Virginia* mentions a “burning spring” in West Virginia, owned by General Washington and Andrew Lewis. This was natural gas.

1790—Jacob Perkins, of Newburyport, Massachusetts, invented about 1790 his nail-cutting machine.

1790—A bloomary was built in 1790 at Embreeville, in Washington county, Tennessee, and another at Elizabethton, on Doe river, in Carter county, Tennessee, about 1795. Wagner’s bloomary, on Roane creek, in Johnson county, was built in this year, and a bloomary was also erected on Camp creek, in Greene county, in 1797.

1791—The first iron enterprise in Kentucky was Bourbon furnace, often called Slate furnace, which was built in 1791 on Slate creek, a branch of Licking river, in Bath county, and about two miles southeast of Owingsville.

1792—Lancaster Turnpike built, first in this country.

1792—A small blast furnace was built in this year by George Anshutz, a native of Alsace, on Two-mile run, now Shady Side, in Pittsburgh. In 1794 it was abandoned for want of ore. It made grates and other small castings.

1800—The first permanent bridge over the Schuylkill at Philadelphia, at Market street, was commenced in 1800 and opened to traffic in January, 1805.

1800—In this year the seat of government of Pennsylvania was moved from Philadelphia to Lancaster, and in 1812 it was removed from Lancaster to Harrisburg.

1800—About 1800 the celebrated Champlain iron ore district in New York was developed, and many Catalan forges, as well as furnaces and a few rolling mills, were soon afterwards built. The forges were true Catalan forges but of an improved type. As late as 1883 there were 27 of these forges, with 171 fires. All are now abandoned.

1801—The first chain bridge in the United States was built this year over Jacob’s creek in Western Pennsylvania by Judge James Finley, of Fayette county.

1802—Catalan forges, or bloomaries, were built in Northern New Jersey long before the Revolution. Many forges were blown by the *trompe*, or water-blast. In 1795 Morse mentions thirty forges in Morris county, New Jersey, and in 1802 a memorial to Congress says that

there were then in New Jersey 150 of these forges. There are now no Catalan forges left in that State.

1803—The beginning of the iron industry in Ohio dates from 1803, in which year its first furnace, Hopewell, was commenced by Daniel Eaton. It was finished in 1804. It stood on the west side of Yellow creek, about one and a quarter miles above its junction with the Mahoning river.

1807—The first railroads in the United States, beginning with this year, were built to haul gravel, stone, coal, and other heavy materials, and were all short roads.

1807—Robert Fulton's steamboat, the *Clermont*, made its successful trial trip on the Hudson on August 17.

1808—Anthracite coal first used in a grate by Judge Jesse Fell, at Wilkesbarre, Pennsylvania, in this year.

1810—The census statistics for 1810, published in 1814, gave the production of cast iron in the census year as amounting to 53,908 gross tons, which included pig iron.

1810—The production of steel in the United States in the census year 1810 amounted to 917 tons.

1810—In 1810 there was a bloomary in Warren county, a forge in Elbert county, and a nailery in Chatham county, Georgia. Two of these were built about 1790.

1810—On June 27, 1810, Clemens Rentgen, a native of the Palatinate, in Germany, obtained a patent from the United States Government for "rolling iron round, for ship bolts and other uses," which invention was put to practical use at Mr. Rentgen's Pikeland works, in Chester county, Pennsylvania, in 1812 and 1813, in which years he rolled round iron, some of which was for the navy.

1811—The first steamboat "on the western waters" was built at Pittsburgh and called the *New Orleans*.

1812—The first rolling mill at Pittsburgh was built in 1811 and 1812 by Christopher Cowan, a Scotch-Irishman, and called the Pittsburgh rolling mill. This mill had no puddling furnaces. Its products were sheet iron, nail and spike rods, shovels, chains, hatchets, hammers, etc.

1812—Salt was first discovered on the Conemaugh in Western Pennsylvania in this year or 1813.

1816—Wire fences were in limited use in the neighborhood of Philadelphia as far back as 1816. The wire used

was manufactured by White & Hazard at their wire works at the Falls of Schuylkill.

1816—In his *History of Philadelphia* (1884) Thompson Westcott says that the first wire suspension bridge in the United States, if not in the world, was thrown across the Schuylkill river, near the Falls of Schuylkill, by White & Hazard. Its use was restricted to foot passengers.

1816—The first rolling mill erected in the United States to puddle iron and roll iron bars was built by Isaac Meason in 1816 and 1817 at Plumsock, on Redstone creek, in Fayette county, Pennsylvania.

1816—The once celebrated iron district in Iron and St. François counties, Missouri, which embraces Iron Mountain and Pilot Knob, appears to have contained the first iron enterprise in this State, which embraced a furnace and forge on Stout's creek, in Iron county, built in 1815 or 1816.

1816—About 1810 Isaac Pennock built Brandywine rolling mill, at Coatesville, Pennsylvania, which was purchased from him about 1816 by Dr. Charles Lukens. The first boiler plates made in the United States were rolled at this mill by Dr. Lukens prior to his death in 1825.

1818—The oldest furnace in Alabama mentioned by Professor J. P. Lesley was built about 1818 a few miles west of Russellville, in Franklin county, and abandoned in 1827. A furnace was built at Polkville, in Calhoun county, in 1843, and Shelby furnace, at Shelby, was built in 1848.

1818—In this year the construction of the first canal tunnel in the United States was undertaken at Auburn, Schuylkill county, Pennsylvania, by the Schuylkill Navigation Company. It was finished in 1821.

1825—The first iron steamboat built in this country was the *Codorus*, built at York, Pennsylvania, in 1825.

1825—The first bar iron rolled in New England was rolled at the Boston iron works, in Boston, in 1825.

1827—On February 28, 1827, the Maryland Legislature granted a charter for the construction of the Baltimore and Ohio Railroad, the first railroad in the United States to be built for the conveyance of passengers as well as freight. Its construction was commenced on July 4, 1828. The road was not opened to Wheeling until January, 1853.

1829—Steam power was not used on any American railroad until 1829. Horse power had previously been used and was used for many years afterwards.

1829—The first locomotive to run upon an American railroad was the *Stourbridge Lion*. It was first used at Honesdale, in Wayne county, Pennsylvania, on August 8, 1829, on the coal railroad of the Delaware and Hudson Canal Company. It was built in England.

1830—The T rail was invented in this year by Robert L. Stevens, the president and engineer of the Camden and South Amboy Railroad and Transportation Company, and T rails were rolled in Wales in 1830 on Mr. Stevens's order and laid down on a part of his road in 1831.

1830—The first locomotive built in the United States and used on a railroad was the *Tom Thumb*, which was built by Peter Cooper at Baltimore and successfully experimented with on the Baltimore and Ohio Railroad in August, 1830. Mr. Cooper was his own engineer. Strictly speaking the *Tom Thumb* was only a working model.

1830—The first American locomotive that was built for actual service was the *Best Friend of Charleston*, which was built at the West Point Foundry, in New York City, for the Charleston and Hamburg Railroad and was successfully put in use on that road in December, 1830.

1830—In 1830 only 23 miles of railroad were in operation in the United States; in 1840 there were 2,818 miles; in 1850 there were 9,021 miles; in 1860 there were 30,626 miles; in 1870 there were 52,922 miles; in 1880 there were 93,262 miles; in 1890 there were 166,703 miles; in 1900 there were 194,262 miles; and in 1907 there were 228,128 miles. These figures do not include double tracks, sidings, etc.; only the length of the main track.

1832—Crucible steel of the best quality was first made in the United States in this year in commercial quantities at Cincinnati by Dr. William Garrard and his brother, John H. Garrard, entirely from American materials. Their works were called the Cincinnati steel works.

1832—In Brown's *History of the First Locomotives in America* it is stated that "the first charter for what are termed city passenger or horse railroads was obtained in

the city of New York and known as the New York and Harlem, and this was the first road of the kind ever constructed, and was opened in 1832. No other road of the kind was completed till 1852, when the Sixth Avenue was opened to the public."

1833—The first railroad tunnel in the United States, four miles east of Johnstown, Pennsylvania, forming part of the Portage Railroad, was completed in 1833 and was first used on November 26 of that year.

1833—In this year the Philadelphia and Reading Railroad Company was chartered. It was opened to Mount Carbon, one mile below Pottsville, on January 13, 1842.

1834—In this year the main line of the Pennsylvania Canal, connecting Philadelphia with Pittsburgh, was opened for traffic throughout its entire length. The building of the canal was commenced in 1826.

1834—The first practical application of the hot-blast to the manufacture of pig iron in this country was made at Oxford furnace, in New Jersey, in 1834, by William Henry, the manager. The fuel used was charcoal.

1834—Bituminous coal in Alabama was first observed in this year by Dr. Alexander Jones, of Mobile.

1835—The first puddling done in New England was at Boston, on the mill-dam, by Lyman, Ralston & Co.

1835—The first successful use of coke in the blast furnace in the United States was accomplished by William Firmstone, at Mary Ann furnace, in Huntingdon county, Pennsylvania, in 1835.

1835—The machine-made horseshoe was patented by Henry Burden, of Troy, New York, in 1835. Other horseshoe patents were issued to him in 1843, 1857, and 1862. Mr. Burden was also the inventor of the hook-headed spike and of the Burden rotary squeezer, the latter in 1840.

1838—Baldwin Locomotive Works exported one locomotive to Cuba, their first shipment to a foreign country.

1839—In 1839 a small charcoal furnace was built four miles northwest of Elizabethtown, in Hardin county, Illinois. This is the first blast furnace in Illinois of which there is any record.

1839—On October 19, 1839, Pioneer furnace, at Potts-

ville, Pennsylvania, built by William Lyman, of Boston, and others, under the auspices of Burd Patterson, of Pottsville, was successfully blown in with anthracite coal by Benjamin Perry and ran for about three months, making about 28 tons of foundry iron a week. This was the first use of anthracite coal in the blast furnace in this country that was attended with a fair degree of success.

1840—On July 3, 1840, the first furnace of the Lehigh Crane Iron Company, at Catasauqua, Pennsylvania, was successfully blown in by David Thomas, who had superintended its construction. Its first cast was made on July 4. From the first this furnace produced 50 tons a week of good foundry iron. This was the first of all the early anthracite furnaces that was completely successful.

1840—Indiana possessed a small charcoal iron industry before 1840. The census mentions a furnace in that year in Jefferson county, one in Parke, one in Vigo, one in Vermilion, and three in Wayne county, the total product being 810 tons of "cast iron." A forge in Fulton county, producing 20 tons of "bar iron," is also mentioned. Bog ore was used.

1840—In 1840 the census reported that 601 tons of "cast iron" had that year been produced in 15 "furnaces" in Southern Michigan. Some of these "furnaces" were undoubtedly foundries, which obtained pig iron from Ohio and other neighboring States; others used bog ore.

1840—The census of 1840 mentions a furnace in "Milwaukee town," Wisconsin, which produced three tons of iron in that year. This was probably a foundry. In 1859 Lesley mentions three charcoal furnaces in Wisconsin.

1841—In the winter of this year and 1842 Connellsville coke was first made in commercial quantities a few miles below Connellsville on the Youghiogheny river.

1842—Wire cable suspension bridge over the Schuylkill at Philadelphia was built by Charles Ellet, Jr.

1843—The development of the Lake Superior copper region was undertaken this year under the auspices of Dr. Curtis G. Hussey, of Pittsburgh.

1844—The first discovery by white men of iron ore in the Lake Superior region was made on the 16th of Sep-

tember, 1844, near the eastern end of Teal lake, in Northern Michigan, by William A. Burt, a deputy surveyor of the General Government. In June, 1845, the Jackson Mining Company was organized at Jackson, Michigan, and in the same year it secured possession of the celebrated Jackson iron mountain. In 1853 a few tons of Jackson ore were shipped to the World's Fair at New York.

1844—On April 24, 1844, Hon. Edward Joy Morris, a member of Congress from Pennsylvania, declared that "not a ton of T rail has yet been made in this country."

1844—The manufacture of heavy iron rails in this country was commenced early in 1844 at the Mount Savage rolling mill, in Allegany county, Maryland, which was built in 1843 especially to roll these rails. The first rail rolled at this mill was an inverted U rail. U rails were in use in the sidings of the Cumberland and Pennsylvania Railroad as late as 1869. We have a short piece.

1844—In this year iron T rails weighing 50 pounds to the yard were rolled at the Mount Savage rolling mill, in Maryland, for the railroad leading from Fall River to Boston. They were ordered by Colonel Borden, of Fall River, and were the first T rails rolled in the United States.

1845—A wire suspension aqueduct over the Allegheny at Pittsburgh was built this year by John A. Roebling—his first use of wire rope for aqueducts or bridges.

1845—The Montour rolling mill, at Danville, Pennsylvania, was built in 1845 expressly to roll T rails.

1845—Splint coal, or block coal, was used in a blast furnace in the fall of 1845 by Himrod & Vincent, of Mercer county, Pennsylvania, in their Clay furnace. It had been previously successfully experimented with.

1846—The first furnace in Ohio to use splint coal, or block coal, in its raw state was built expressly for this purpose at Lowell, in Mahoning county, by Wilkeson, Wilkes & Co., and successfully blown in by them on the 8th of August, 1846.

1846—The Pennsylvania Railroad Company was chartered to build a railroad from Harrisburg to Pittsburgh.

1849—The production of iron rails in this country in 1849 was 21,712 gross tons, and in 1872, the year of larg-

est. production, it was 808,866 tons. In 1904 the production had dwindled to 871 tons and in 1906 to 15 tons.

1850—The first shipment of iron ore from the Lake Superior region was made in 1850 and consisted of about ten tons, "which was taken away by Mr. A. L. Crawford, of New Castle, Pennsylvania." A part of this ore was reduced to blooms and rolled into bar iron. It was hauled around Sault Ste. Marie on a strap railroad.

1850—Petroleum was first refined in this year by Samuel M. Kier, of Pittsburgh.

1852—On December 10, 1852, the Pennsylvania Railroad was completed from Philadelphia to Pittsburgh, connections being made with State railroads.

1852—The first wire nails manufactured in the United States were made in 1851 or 1852 at New York by William Hassall. All the wire nails made by Mr. Hassall were made from iron or brass wire and were of small sizes, escutcheon and upholsterer's nails being specialties.

1853—The first use of Lake Superior ore in a blast furnace occurred in Pennsylvania in 1853, when about 70 tons, brought from Erie by canal, were used in the Sharpsville and Clay furnaces, in Mercer county.

1854—It is stated by the *American Cyclopædia* that Peter Cooper "was the first to roll wrought iron beams for fire-proof buildings," at Trenton, N. J., in 1854. They were 7 inches deep, weighed about 81 pounds per yard, and were known as deck beams. They were used in Harper Brothers' and the Cooper Union buildings, New York, and also on the Camden and Amboy Railroad as rails.

1855—In this year the production of pig iron with anthracite coal exceeded that made with charcoal.

1855—On March 6 the American Iron Association, now the American Iron and Steel Association, was organized at Philadelphia. In 1864 the present name was adopted.

1855—The first 30-foot iron rails rolled in this country were rolled at the Cambria iron works, at Johnstown, in 1855. There was no demand for them. The first 30-foot iron rails rolled in this country on order were rolled at the Montour rolling mill, at Danville, Pennsylvania, in January, 1859, for the Sunbury and Erie Railroad Company.

1857—The iron industry at Chicago dates from 1857, when Captain E. B. Ward, of Detroit, built the Chicago rolling mill, "just outside of the city," to reroll iron rails.

1857—The main line of the Pennsylvania Canal, from Philadelphia to Pittsburgh, was sold this year to the Pennsylvania Railroad Company for \$7,500,000.

1858—The first pig iron produced in the Lake Superior region was made in 1858 by Stephen R. Gay in a small furnace on Déad river, three miles northwest of Marquette.

1859—Clinton furnace, built in 1859 by Graff, Bennett & Co., at Pittsburgh, and blown in on the last Monday of October, was the first furnace built in Allegheny county after the Anshutz furnace at Shady Side was abandoned.

1859—Metallic zinc first made successfully in this country by Joseph Wharton, at South Bethlehem.

1860—The production of pig iron in the United States in 1860 was 821,223 tons and that of steel was 11,838 tons.

1860—As late as 1860 there were about two hundred Catalan forges, or bloomaries, south of the Ohio and the Potomac rivers, which made bar iron under the hammer directly from the ore. At the close of the nineteenth century only one of these bloomaries survived and it has since been abandoned.

1862—The Phoenix wrought-iron column, or wrought-steel column, is the invention of Samuel J. Reeves, of Philadelphia, in this year.

1864—In September, 1864, William F. Durfee, acting for the Kelly Pneumatic Process Company, succeeded at experimental works at Wyandotte, Michigan, in making the first pneumatic, or Bessemer, steel in this country.

1865—The control in this country of Mr. Bessemer's steel patents was obtained in 1864 by John F. Winslow, John A. Griswold, and Alexander L. Holley, all of Troy, New York. In February, 1865, Mr. Holley was successful at Troy in producing Bessemer steel at experimental works which he had constructed for his company in 1864.

1865—The first Bessemer steel rails made in the United States were rolled in May of this year at the Chicago rolling mill, in Chicago, from blooms made by William F. Durfee at Wyandotte.

1866—The first elevated city passenger railroad ever built was the Greenwich street railroad in New York, which was commenced in 1866 and has been in successful operation since 1872. It is now known as the Ninth Avenue Elevated Railway. The next project of this character was the Gilbert elevated railroad, in New York, for the construction of which a charter was granted in 1872.

1867—The first Siemens gas furnace that was regularly introduced into this country for any purpose was built by John A. Griswold & Co., at Troy, New York, and used as a heating furnace in their rolling mill, the license having been granted on the 18th of September, 1867.

1868—The first open-hearth furnace introduced into this country for the manufacture of steel by the Siemens-Martin process was built in 1868 by Frederick J. Slade for Cooper, Hewitt & Co., at Trenton, New Jersey.

1868—In 1867 or 1868 John Player, of England, introduced his iron hot-blast stove into the United States. Mr. Player personally superintended the erection of the first of his stoves in this country at the furnace of J. B. Moorhead & Co., at West Conshohocken, Pennsylvania.

1869—In this year pig iron made with bituminous coal and coke first exceeded that made with charcoal.

1869—On May 10, 1869, the Union and Central Pacific Railroads were joined at Promontory Point, Utah, completing the first railroad line across the continent.

1869—The first successful application in this country of the Siemens regenerative gas furnace to the puddling of iron was made under the direction of William F. Durfee at the rolling mill of the American Silver Steel Company, at Bridgeport, Connecticut, in 1869.

1873—The first Transatlantic iron steamships to attract attention which were built in this country were the four vessels of the American Steamship Company's line, the *Pennsylvania*, *Ohio*, *Indiana*, and *Illinois*, built of Pennsylvania iron at Philadelphia in 1871, 1872, and 1873, by W. Cramp & Sons. They were each 355 feet long and their carrying capacity was 3,100 tons each.

1873—The first considerable importation of iron ore into this country occurred in 1873, when about 46,000

tons were imported, the most of which came from Canada. In 1902 we imported 1,165,470 tons of iron ore, of which Cuba sent 696,375 tons. In 1907 we imported 1,229,168 tons, of which 657,133 tons came from Cuba. Our first imports of iron ore from Cuba took place in 1884.

1874—At the Siberian rolling mill of Rogers & Burchfield, at Leechburg, in Armstrong county, Pennsylvania, natural gas, taken from a well 1,200 feet deep, was first used in 1874 in the manufacture of iron. For six months of this year natural gas furnished all the fuel required by this mill for puddling, heating, and making steam.

1874—The two-story bridge across the Mississippi at St. Louis was formally opened on the 4th of July of this year. It was built by the Keystone Bridge Company, of Pittsburgh, active operations having been commenced on March 19, 1868. Its centre arch is 520 feet long, and there are two other arches each 502 feet long. These arches are composed of tubes made of American steel.

1874—The Girard avenue bridge over the Schuylkill at Philadelphia was also opened to the public on July 4, 1874. It was built entirely of iron in fourteen months by Clarke, Reeves & Co., of Phoenixville. This bridge is 1,000 feet long, 100 feet wide, and is composed of five spans. When built it was the widest bridge in the world.

1874—In 1874 John Roach & Son launched for the Pacific Mail Steamship Company, at their shipyard at Chester, Pennsylvania, two iron steamships, the *City of Peking* and the *City of Tokio*, twin vessels in all respects. They were each 423 feet long and had a carrying capacity of 5,000 tons each.

1875—The production of pig iron made with bituminous coal and coke exceeded that made with anthracite.

1875—The first 60-foot rails rolled in this country were rolled by the Edgar Thomson Steel Company, at its works near Pittsburgh, in 1875, and were of steel.

1875—The Whitwell fire-brick hot-blast stove, the invention of Thomas Whitwell, of England, was first used in this country at Rising Fawn furnace, in Dade county, Georgia, on June 18, 1875. Its next application was at Cedar Point furnace, at Port Henry, in Essex county, New

York, on August 12, 1875. The stoves at Cedar Point furnace were built before those at Rising Fawn furnace.

1875—The first wire nails that were made of steel wire in this country were made at Covington, Kentucky, in 1875, by Father Goebel, the pastor of St. Augustine's Catholic Church in that city, who imported a wire-nail machine from Germany. Father Goebel in the same year formed the Kentucky Wire Nail Works and ordered two more machines, he being president of the company.

1876—At the Centennial Exhibition at Philadelphia, in 1876, the Edgar Thomson Steel Company exhibited a steel rail which at that time was the longest steel rail that had ever been rolled. It was 120 feet long and weighed 62 pounds to the yard.

1876—Malleable nickel was first made in the world in this year by Joseph Wharton from Pennsylvania nickel ore.

1877—The first set of Siemens-Cowper-Cochrane fire-brick hot-blast stoves built in this country was erected at one of the Crown Point furnaces, in Essex county, New York, in 1877; but the first set of these stoves in any part of America was erected at Londonderry, Nova Scotia, by the Steel Company of Canada, Limited, in 1876.

1878—The world's production of pig iron in 1878 was estimated by the compiler of this chronological record to have amounted to 14,118,000 gross tons, and the world's production of steel in the same year was estimated to have amounted to 3,021,000 tons.

1880—The first elevated railroad constructed in this country in connection with a regular freight and passenger railroad was undertaken by the Pennsylvania Railroad Company in 1880 and finished in 1881. It constitutes an extension of the main line of the Pennsylvania Railroad to the heart of the city of Philadelphia and is about a mile long. It was opened for freight purposes on April 25, 1881, and for passengers on December 5, 1881.

1883—The first steel suspension bridge over the East river, connecting New York with Brooklyn, was projected in 1865 but its construction was not actually undertaken until 1869. Its engineer was John A. Roebling, who died in this year and was succeeded by his son, Washing-

ton A. Roebling. The bridge was completed and formally opened on May 24, 1883. The total length of the bridge and its approaches is 5,989 feet. The length of the main span is 1,595 feet. The wire cables for the bridge were made of crucible steel and some open-hearth steel, all of American manufacture.

1884—The first basic steel made in the United States was produced experimentally at Steelton, Pennsylvania, by the Pennsylvania Steel Company, on May 24, 1884, in a Bessemer converter. The steel was of excellent quality.

1884—In 1884 there were still in existence in this country four slitting mills, which were used spasmodically in the conversion of plate iron into nail rods.

1886—Basic open-hearth steel was first made in this country by the Otis Iron and Steel Company, of Cleveland. One furnace was started on January 19, 1886.

1887—The first contract for American-made armor was made by the Navy Department with the Bethlehem Iron Company on June 1, 1887, and was for two battleships and four monitors, and called for 6,700 tons of plain steel armor, oil-tempered and annealed, at an average price of \$536 per ton. But the first armor actually made under this contract was not made by this company until 1890.

1888—The manufacture of aluminum in this country was successfully established at Pittsburgh in this year by the Pittsburgh Reduction Company.

1888—The beginning of the continuous manufacture of basic steel in this country as a commercial product dates from 1888, on the 30th of March of which year basic open-hearth steel was produced at the Homestead steel works of Carnegie, Phipps & Co., Limited.

1890—The tinplate industry established in this country.

1890—In this year the United States for the first time made more pig iron than Great Britain. This leadership was steadily maintained until 1894, when it was lost, but in 1895 it was regained. In 1896 it was again lost, but it was again regained in 1897 and has since been maintained.

1890—The world's production of pig iron in this year is given in *Iron in All Ages* as 26,968,468 tons, and its production of steel in the same year as 12,151,255 tons.

The percentage of pig iron produced by this country in that year was 34.1 and its percentage of steel was 35.2.

1896—The Helton Forge of W. J. Pasley, at Crumpler, Ashe county, North Carolina, was the last Catalan forge in the South to make charcoal iron bars direct from the ore. It made its last blooms in 1896.

1897—Two miles below Niagara Falls the Pennsylvania Steel Company, of Steelton, erected in 1897 a double-deck steel arch bridge over the Niagara river, the central arch of which is 550 feet long. This bridge and the one mentioned below are among the world's great bridges.

1897—In 1897 the A. and P. Roberts Company, of Philadelphia, erected a steel arch bridge over the Niagara river, just below the Falls. The length of the main arch span is 840 feet, and there are two approach spans of 210 feet and 190 feet respectively. The height of the bridge above the water line is 185 feet. It is 46 feet wide.

1897—First pressed steel car was built by the Schoen Pressed Steel Company, at Allegheny, Pa., in this year.

1899—In this year the British Government ordered a steel railroad bridge of American design and construction, consisting of seven spans of 150 feet each, to be built across the Atbara river in the Soudan country, south of Egypt. The contract for the construction and erection of the bridge was awarded to the A. and P. Roberts Company, of Philadelphia, which rolled and fitted the steel for the bridge at its Pencoyd works. In his report upon the bridge in the following April Lord Cromer said: "An English firm offered to deliver the work in six and a half months at a cost of £10,490. The American firm's tender was £6,500 for delivery in forty-two days." The bridge was delivered to a British vessel at New York within the time mentioned in the contract. It was erected over the Atbara river by an erecting crew from the works of the A. and P. Roberts Company.

1899—In this year the Pennsylvania Steel Company built and erected for about \$700,000 a steel viaduct 2,260 feet long and 320 feet high spanning the Gokteik Gorge, in Burma, British India, eighty miles east of Mandalay. The steel viaduct crosses the Chungzoune river,

which disappears into a natural tunnel just above the viaduct, the foundations of which rest partly on a natural bridge formed by this tunnel. Farther down the river again comes to the surface. The height from the river to the column foundations is 500 feet. The viaduct above this rises to a height of 320 feet. The bridge was erected by a crew from the Pennsylvania Steel Company's works at Steelton for the Burma Railroad Company. The contract was secured in competition with English bridgebuilders.

1900—*Poor's Manual* reports that in 1900 there were 257,853 miles of steam railroad track in the United States, including second, third, and fourth tracks, sidings, etc., and not including elevated railroads or electric roads. The same authority reports that in 1907 there were 324,033.38 miles, of which 224,382.19 miles were single track and 99,651.19 miles were second, third, and fourth tracks, sidings, etc. Of the total 314,713.50 miles were laid with steel rails and 9,319.88 miles were laid with iron rails.

1900—In this year the United States for the first time made more open-hearth steel than Great Britain.

1901—The Standish iron works, at Standish, Clinton county, New York, were the last works in the North to make charcoal blooms by the Catalan process direct from the ore. They were built in 1895, were last active in 1901, and were recently abandoned.

1903—The world's production of pig iron in 1903 we have estimated to have amounted to 46,368,000 tons. Of this total estimated production the United States made 18,009,252 tons, or 38.84 per cent.

1903—We have estimated the world's production of steel in 1903 to have amounted to 35,846,000 tons, of which the United States made 14,534,978 tons, or 40.55 per cent.

1905—A steel cantilever bridge, under construction in this year over the St. Lawrence river at Quebec, and to be finished in 1909, was intended to be the most remarkable structure of its kind in the world. The weight of this bridge was to be about 35,000 tons. Its total length was to be 3,300 feet. The central span of 1,800 feet was to cross the entire St. Lawrence river at a height of 150

feet above high water and was to be the longest span in the world, the next longest span being that of the Forth Bridge in Scotland, which is 1,710 feet long. The height of the cantilever towers was 360 feet above the river. The Phoenix Bridge Company, of Phoenixville, Pennsylvania, received the contract for building the bridge. On Thursday, August 29, 1907, the bridge collapsed, about 80 workmen losing their lives. It was the south half that fell, all that had been erected. The abutments and piers of the bridge were not affected by the collapse. A Royal Commission of Inquiry was appointed by the Canadian Government, and on March 9, 1908, this committee presented to the House of Commons an elaborate report, placing the blame for the collapse of the bridge upon the engineers who designed and approved the plan of its construction, but exonerating the Phoenix Bridge Company from all blame.

1906—In this year the world's production of iron ore amounted to about 125,760,000 tons, of which the United States produced 47,749,728 tons, or 37.97 per cent.; the production of coal and lignite was 1,003,100,000 tons, of which the United States mined 369,783,284 tons, or over 36.86 per cent.; the production of pig iron was 58,650,000 tons, of which the United States made 25,307,191 tons, or 43.15 per cent.; and the production of steel ingots and castings was 51,060,000 tons, of which this country made 23,398,136 tons, or over 45.82 per cent.

1907—In 1890 this country imported 329,435 tons of tinplates and terne plates; in 1907 it imported 57,773 tons.

1908—In 1908 the Pennsylvania Steel Company rolled grooved guard steel rails weighing 151 pounds to the yard.



CHAPTER XXVIII.

THE MUHLENBERG FAMILY OF PENNSYLVANIA.

THE remainder of this volume will be devoted to sketches of some distinguished Pennsylvanians, nearly all of them Western Pennsylvanians. In this chapter we give a brief history of a family of Pennsylvania Germans which has contributed to our country as many men of prominence and distinction as any other family in any part of the United States, the justly celebrated Adams and Field families of Massachusetts not excepted.

(1.) The Rev. Heinrich Melchior Muhlenberg, D. D., the most eminent among the founders of the Lutheran Church in this country, and who is affectionately known as the Patriarch by those who have always regarded him as its real founder, was born at Eimbeck, in Hanover, Germany, on September 6, 1711. Liberally educated in German universities and subsequently ordained as a Lutheran minister he arrived in Philadelphia on November 25, 1742, to labor among the German Lutherans who had recently come to this country in large numbers. He died at his home at The Trappe, in Montgomery county, Pennsylvania, on October 7, 1787. He was an active minister of the Lutheran Church during the whole of his residence of forty-five years in his adopted country, in which position, as well as by reason of his exalted character and high intellectual attainments, he exercised great influence in the councils of his church and in shaping the public opinion of his day. For several years he preached in Philadelphia, but for the greater part of his active life he preached regularly at The Trappe. Dr. Muhlenberg possessed executive ability of a high order. He was an ardent friend of colonial independence, and because of his devotion to the patriotic cause he was subjected to much persecution and endured many privations during the Revolutionary war.

There is still standing at The Trappe, and in good condition, a stone church which was built in 1743 when

Dr. Muhlenberg was the pastor of the Lutheran congregation at that place. He laid its corner-stone. Near the end of his life the degree of doctor of divinity was conferred upon this eminent and scholarly man by the University of Pennsylvania. He was the master of three languages, English, German, and Dutch, which he spoke fluently, and he could also read Latin, Hebrew, Greek, French, Bohemian, and Swedish. His remains rest in the well-kept graveyard attached to the old stone church at The Trappe. There is a Muhlenberg township in Berks county which was so named in his honor.

Dr. Muhlenberg married on April 22, 1745, Anna Maria, a daughter of Conrad Weiser, of Berks county, the noted representative of the provincial government in its dealings with the Indians. The doctor was the father of three gifted sons, all of whom became Lutheran ministers. These sons were John Peter Gabriel, Frederick Augustus Conrad, and Gotthilf Henry Ernestus Muhlenberg. All these sons attained honorable distinction. Like their father they were not only Lutheran ministers but they were also public-spirited citizens of commanding influence.

(2.) John Peter Gabriel Muhlenberg was born at The Trappe on October 1, 1746. He and his two younger brothers, hereafter to be mentioned, were educated in part at the University of Halle, in Germany. In 1772 he became the pastor of a Lutheran congregation at Woodstock, Virginia, situated in a settlement of Germans in the Shenandoah valley, most of whom had emigrated from Pennsylvania. He also ministered to other Lutheran congregations in this valley. In 1774 he was chosen a member of the Virginia House of Burgesses. At the outbreak of the Revolution in 1775 he was requested by Washington, with whom he had become personally acquainted, to accept a colonel's commission in the Virginia Line, and this invitation he accepted. Addressing his congregation after services one Sunday he is reported to have said: "There is a time for all things—a time to preach and a time to pray, but there is also a time to fight, and that time has now come," following this remark by throwing back his clerical robe and exposing a colonel's uniform

and reading his colonel's commission. At the door of the church he ordered the drums to beat for recruits and many members of his congregation and other Germans in the valley promptly enlisted. Nearly 300 men of the churches in the valley enlisted that day under Colonel Muhlenberg's banner. They formed part of the 8th Virginia Regiment, which was afterwards known as "the German Regiment." With Colonel Muhlenberg at its head the regiment marched to the relief of Charleston, South Carolina, and took part in the battle of Sullivan's Island.

Peter Muhlenberg participated with credit in many other important engagements of the Revolution. In 1777 he was commissioned a brigadier general and at the close of the war he retired from the army as a major general. He was at Brandywine, Germantown, Monmouth, Stony Point, Yorktown, and other places where his valor and skill were tested, and he was with his men at Valley Forge in the winter of 1777. He was a fast friend of Washington during the "Conway cabal." Returning after the war to Pennsylvania, which was afterwards his home, he was in 1785 chosen vice president of the supreme executive council of that State, Benjamin Franklin being its president, and he was re-elected in 1786 and 1787. He was a member of the House of Representatives of the First and Third Congresses. In 1796 he was a Presidential elector. In 1798 he was elected a Representative in the Sixth Congress, serving from March 4, 1799, to March 3, 1801. On February 18, 1801, he was chosen a United States Senator, but soon after taking his seat he resigned this office that he might accept the position of supervisor of the revenue for the district of Pennsylvania, an important office in that day, tendered to him by President Jefferson, to whose political fortunes he was attached. In 1802 he was appointed collector of customs for the port of Philadelphia. He died on October 1, 1807, and was buried at The Trappe beside his illustrious father. Two of his sons reflected honor on the family name after his death. Peter was a major in the regular army during our second war with Great Britain, and Francis Swaine was a Representative from Ohio in the Twentieth Congress.

General Muhlenberg's statue is one of the two contributed by Pennsylvania to Statuary Hall in the Capitol of the United States, the other being that of Robert Fulton, Muhlenberg representing the German element in the population of Pennsylvania and Fulton representing the Scotch-Irish element.

In Henry A. Muhlenberg's *Life of Major General Peter Muhlenberg* (1849) it is stated that "in Trumbull's painting of the capitulation of Yorktown, in the rotunda of the Capitol, General Muhlenberg's is the second figure from the left and is said to be an excellent likeness." An oil portrait of the general that will arrest attention will be found among the portraits of Revolutionary worthies in Independence Hall in Philadelphia. A county in Kentucky was named Muhlenberg in his honor.

(3.) Frederick Augustus Conrad Muhlenberg, the second of the three sons mentioned, was born at The Trappe on January 1, 1750. Entering the Lutheran ministry his talent for public affairs soon asserted itself. Like his father and his brother Peter he was an ardent advocate of colonial independence. He was a member of the Continental Congress from Pennsylvania in 1779 and 1780. In 1780 he was elected a member of the General Assembly of Pennsylvania and was Speaker of that body in 1781 and 1782. In 1787 he was a delegate to the Pennsylvania convention which was called to consider the Constitution of 1787, which it ratified. He was also Speaker of that body. He was a member of the House of Representatives in the First, Second, Third, and Fourth Congresses under the new Constitution and during the whole of Washington's Administration, and was Speaker of the House in the First Congress and again in the Third Congress. In 1783 he was elected a member of the Council of Censors which was provided for under the first Constitution of Pennsylvania, adopted in 1776. In 1793 he was the unsuccessful Federalist candidate for Governor of Pennsylvania, receiving 10,706 votes, against 18,590 votes cast for Thomas Mifflin, the Democratic candidate. In 1796 he was again the Federalist candidate for Governor but was overwhelmingly defeated by Mifflin, the vote being 1,011 for Muh-

lenberg and 30,020 for Mifflin. It is evident that in the campaign of 1796 Muhlenberg was only nominally a candidate. He died at Lancaster on June 5, 1801.

(4.) Gotthilf Henry Ernestus Muhlenberg, the youngest of the three brothers, was born at The Trappe on November 17, 1753, and entered the Lutheran ministry at an early age. He was afterwards pastor of the Lutheran church at Lancaster, Pennsylvania, for thirty-five years, from 1780 until his death in that city on May 23, 1815. He was a profound theologian and an accomplished scholar, scientific subjects absorbing his attention as far as his pastoral duties would permit. He was noted for his interest in botany, in which branch of natural history he became an authority. He was styled "the American Linnæus." He carried on an extensive correspondence with European naturalists and was a prolific writer for the public press on scientific subjects. He was a member of the American Philosophical Society and of other scientific societies in America and Europe. During the Revolution he was an active friend of the patriotic cause.

(5.) Henry Augustus Philip Muhlenberg, D. D., son of Gotthilf, was born at Lancaster on May 13, 1782, and like other members of the family entered the Lutheran ministry. He was the pastor of Trinity Lutheran church at Reading, Pennsylvania, from 1802 to 1827, when, also like others of his family, he exchanged the pulpit for political office. There are few families in this country which are fitted for public life by natural endowment from generation to generation and the Muhlenberg family was of this exceptional type, although all its members that have been mentioned, and others yet to be mentioned, were educated for the Christian ministry and entered upon pastoral duties. Henry Augustus Philip was elected a Democratic Representative in Congress in 1828 and served continuously in the House by re-election from December, 1829, to February, 1838, when he resigned to become the first United States Minister to Austria, to which position he had been appointed by President Van Buren, and which office he resigned in December, 1840. Before accepting the Austrian mission Mr. Muhlenberg had declined

successively the Secretaryship of the Navy and the mission to St. Petersburg which had been offered to him by Mr. Van Buren. In 1835 he headed one of two wings of the Democratic party in Pennsylvania as its candidate for Governor but was defeated. In 1844 he was the candidate of the united Democratic party for Governor and would probably have been elected if he had lived until the votes were counted, but he died at Reading on August 11 of that year. His place on the ticket was taken by Francis R. Shunk, who was elected Governor in that year and was re-elected in 1847.

Henry Augustus Philip Muhlenberg was twice married, both wives being daughters of Governor Joseph Hiester, a distinguished soldier of the Revolution, who, after a long service in Congress, was elected Governor of Pennsylvania by the Federalist party in 1820, serving three years.

Henry Augustus Muhlenberg, a son of the above-mentioned Muhlenberg, born at Reading in 1823, was elected a member of the General Assembly in 1849 and a Representative in Congress in 1852, but died in 1854 soon after taking his seat. He was a lawyer. In 1849 he published a *Life of Major General Peter Muhlenberg* which contains much Revolutionary history that is both rare and valuable. A son of this gentleman, also named Henry A. Muhlenberg, and also a member of the bar, died at Reading on May 14, 1906. He was at one time an unsuccessful Republican candidate for Congress in a Democratic district.

(6.) Frederick Augustus Muhlenberg, D. D., LL. D., son of Frederick Augustus Hall Muhlenberg, M. D., and grandson of Gotthilf, was born in Lancaster on August 25, 1818, and became a Lutheran minister in early life. He was distinguished as a scholar and as a college professor. He was professor of languages in Franklin College, at Lancaster, from 1839 to 1850, and of the Greek language and literature in Pennsylvania College, at Gettysburg, from 1850 to 1867. In the latter year he was chosen the first president of Muhlenberg College, at Allentown, which position he filled until 1876, when he resigned to accept the Greek chair in the faculty of the University of Pennsylvania, holding this position until 1888. In 1891 he accepted the

presidency of Thiel College, at Greenville, Mercer county, at the urgent request of the friends of the college, a Lutheran institution, resigning this position after several years' service. He died at Reading on March 21, 1901. Dr. Muhlenberg was especially distinguished for his thorough knowledge of the Greek language and literature. He was a voluminous writer on educational and other subjects.

(7.) Rev. William Augustus Muhlenberg, D. D., son of Henry William Muhlenberg and grandson of Frederick Augustus Conrad Muhlenberg, was born in Philadelphia on September 16, 1796, and died in New York on April 8, 1877. This scion of the Muhlenberg house did not adhere to the Lutheran faith but became a clergyman of the Protestant Episcopal Church. From 1817 to 1821 he was assistant rector of Christ church, Philadelphia, under Bishop White, and soon afterwards entered upon ministerial work in New York. He became an eminent churchman. He was noted for his zeal and success in educational and charitable work within the bounds of the Episcopal Church and also for his literary attainments. He is especially remembered as the author of several notable hymns, including "I Would Not Live Alway," "Like Noah's Weary Dove," and "Shout the Glad Tidings!"

(8.) The Patriarch Muhlenberg was not only the father of three gifted sons but he was also the father of four daughters of superior intelligence, two of whom married Lutheran ministers. The first of these daughters, named Eve Elizabeth, was married to Rev. Christopher Emanuel Shulze and became the mother of another Lutheran minister, John Andrew Melchior Shulze, who was born in Berks county on July 19, 1775. After following his sacred calling for a few years the Muhlenberg blood that was in his veins led him into the field of political activity, and after filling acceptably a number of minor elective positions he was chosen Governor of Pennsylvania in 1823 and again in 1826, serving in all six years. He was one of the most popular Governors Pennsylvania has ever had. At his second election to the Governorship he was virtually without opposition, only a few votes being polled against him. He died on November 18, 1852, at Lancaster.

The details above presented may be summarized as follows : Dr. Muhlenberg, the founder of the Muhlenberg family, brought order out of disorder in the Lutheran Church of this country, and by his individual exertions established its influence and authority upon firm foundations. His two oldest sons, Peter and Frederick, were Representatives in Congress when Washington was President, Peter having previously served with honor as one of Washington's generals during the whole period of the Revolutionary war and Frederick having previously served in the Continental Congress. Peter was afterwards elected a United States Senator from Pennsylvania. Frederick was the Speaker of the House during the First and Third Congresses. He was twice the unsuccessful candidate of the Federalist party for Governor of Pennsylvania. Dr. Muhlenberg's third son, Gotthilf, was a naturalist of world-wide reputation. Gotthilf's son, Henry Augustus Philip, was a prominent leader of the Democratic party, long a Representative in Congress, Minister to Austria, and twice the Democratic candidate for Governor of Pennsylvania. Henry Augustus, son of Henry Augustus Philip, was a Representative in Congress. Gotthilf's grandson, Frederick Augustus, was distinguished as a college professor and college president. William Augustus, the grandson of the first Speaker of the House of Representatives, was a prominent Episcopal clergyman, especially noted as a writer of hymns that are sung in all our churches. John Andrew Shulze, a grandson of the Patriarch through one of his daughters, was twice elected Governor of Pennsylvania.

The second daughter of Dr. Muhlenberg, Margaretta Henrietta, married Rev. John Christopher Kunze, D. D., a native of Germany, who emigrated to this country in 1770. In 1784 he became the pastor of Christ church, (Lutheran,) in New York, which position he filled until his death in 1807. Dr. Kunze was a very learned man. The third daughter, Mary Catharine, married Francis Swaine, a politician of note in his day and brigadier general of the State militia in 1805. The fourth daughter, Maria Salome, married Matthias Richards, who was a Representative in Congress for two terms, from 1807 to 1811, and held

other public offices. One of her sons, Rev. John William Richards, D. D., born in 1803 and dying in 1854, entered the Lutheran ministry. His son, Rev. Matthias Henry Richards, D. D., born in 1841 and dying in 1898, was eminent as a scholar and as a Lutheran minister and as a writer. He was for many years professor of the English language and literature in Muhlenberg College.

Another son of John William Richards, Henry Melchior Muhlenberg Richards, born in 1848, saw active service in the Union army during the civil war, graduated at the United States Naval Academy at Annapolis in 1869, and served with distinction in the navy until 1875, when he resigned. In 1898 he was the executive officer of the United States ship *Supply* in the Spanish war. He is a liberal contributor to Pennsylvania German literature.

Such is the brief record of the distinguished founder of the Muhlenberg family in this country and of his most noted descendants, many of whom have also achieved distinction and accomplished results worthy of lasting remembrance by all Pennsylvanians. Nearly all were ministers of the Gospel, and nearly all were public-spirited citizens whose talents fitted them for public life. Nearly all were gifted with literary tastes and nearly all were accomplished scholars. Two of the sons of the founder were prominently identified with the Revolutionary cause and were conspicuous in the organization of the Government which was created by the Constitution of 1787. As we stated at the beginning, no State in the Union can boast of a family which has contributed to our country a larger number of eminent men than this family of Pennsylvania Germans.



CHAPTER XXIX.

GENERAL ARTHUR ST. CLAIR.

THE most distinguished of all the military heroes of Western Pennsylvania and one of the most distinguished of the whole country in the times that tried men's souls was Major General Arthur St. Clair, of Westmoreland county.

Arthur St. Clair was born at Thurso, Scotland, on March 23, 1736, according to a communication from the historian, George Dallas Albert, which was published in the *Greensburg Democrat* in March, 1898, after the publication of his *History of Westmoreland County*. General St. Clair died on August 31, 1818. The year of his birth has always been given in the cyclopædias and elsewhere as 1734, with the month and the day of the month omitted. Sir Thomas St. Clair, a noted genealogical authority in England, insists that St. Clair was born in 1734.

Young St. Clair was educated at the University of Edinburgh and afterwards was a student of medicine. Tiring of his medical studies he abandoned them in a little more than a year and in 1757 he entered the British army as an ensign. In 1758 he crossed the Atlantic in Admiral Boscawen's fleet and in the same year served under General Amherst at the siege and capture of Louisburg. In 1759 he served under General Wolfe at the capture of Quebec. In this year he was commissioned a lieutenant. In 1760 he married Phoebe Bayard, of Boston, a daughter of Balthazar Bayard and Mary Bowdoin, both of Huguenot descent. On both her father's and mother's side she was of distinguished lineage. In 1762 Lieutenant St. Clair resigned his commission in the army and in 1764 he is said to have come to Pennsylvania.

In *Smith's Life and Public Services of Arthur St. Clair* we find the first definite reference to St. Clair's presence in Pennsylvania. He is there said to have established his residence in Pennsylvania, first at Bedford in 1764 and afterwards in Ligonier valley. After 1764 there is a hia-

tus of several years in Smith's account. The narrative proceeds: "On the 5th of April, 1770, he was appointed surveyor for the district of Cumberland, which then embraced the western part of the State." (The county of Cumberland is meant.) Smith continues: "A month later the offices of justice of the court of quarter sessions and common pleas, and member of the proprietaries', or Governor's, Council for Cumberland county was conferred upon him. When Bedford county was erected in 1771 the Governor made St. Clair a justice of the peace, a recorder of deeds, clerk of the orphan's court, and prothonotary of the court of common pleas for that county. The same year St. Clair, in connection with Moses Maclean, ran a meridian line, nine and a half miles west of the meridian of Pittsburgh. In 1773 Westmoreland was erected from Bedford, when Governor Penn sent St. Clair appointments corresponding with those held by him for Bedford."

Smith does not explain the inducements which led St. Clair to locate at Bedford in 1764, but John N. Boucher, in his recently published *History of Westmoreland County*, throws some light on this subject and also upon the movements of St. Clair in immediately succeeding years. He says: "Shortly after his marriage he removed to Bedford, Pennsylvania, having become acquainted with the Penns, who were then proprietaries of the province. As agent for them he looked after their possessions in the western part of the province and took up lands for himself. In 1767 he was appointed commander of Fort Ligonier, which position he filled for over two years. After the opening of the land office in 1769 he was closely identified with the formation of new counties and in the sale and settlement of western lands. His brother-in-law, Captain Bayard, also came here, and together they took up large tracts of land in the southwestern part of the county. In these old boundaries he is sometimes designated as Lieutenant and sometimes as Captain St. Clair."

Albert says that in May, 1770, Arthur St. Clair and others whose names are mentioned "were among the justices of the peace appointed for that portion of Cumberland county *west of Laurel Hill*," which indicates that

St. Clair was a resident of Ligonier valley at that time. The *Proceedings of the Governor and Executive Council* of the province say that on November 23, 1771, a special commission was appointed to hold a court of oyer and terminer at Bedford to try Lieutenant Robert Hamilton, of His Majesty's 18th Regiment of Foot, who was charged with the murder in Bedford county of Lieutenant Tracy, of the same regiment. This commission was composed of the "three eldest justices of the peace" in Bedford county, John Frazer, Bernard Docherty, and Arthur St. Clair. Ligonier valley was then in Bedford county.

Just when St. Clair removed his residence from Bedford to Ligonier valley does not appear. His home was probably at Ligonier. Albert gives a list of the lands acquired by him in Westmoreland county between 1767 and 1793, which list was obtained from the records of the land office. It embraces in all 8,270 acres. In addition Albert shows that St. Clair had obtained title to 2,611 acres in other western counties in Pennsylvania, 2,000 of which were in Crawford, Erie, and Lawrence counties. The latter were presented to St. Clair by the State of Pennsylvania after the Revolution. Other lands were located in Somerset county. Albert also says that a land warrant issued to St. Clair on November 23, 1773, for 592 acres in Ligonier township, Westmoreland county, mentions that he was "commandant at the post of Fort Ligonier in April, 1769." He also quotes (page 38) from a permit in St. Clair's handwriting given to Frederick Rhorer "by Arthur St. Clair, late Lieut. in his Majesty's Sixtieth Reg. of foot, having the care of his Majesty's fort at Ligonier," granting to Rhorer the use of "a certain Piece of Land in the neighborhood of Fort Ligonier," the permit being "given under my hand at Ligonier this 11th day of April, 1767," the signature of "Ar. St. Clair" following.

As has been stated, Westmoreland county was established in 1773. On April 6 of that year its first court was held at Hannastown. Albert gives a copy of St. Clair's commission as prothonotary of the county, issued on February 27, 1773, by Richard Penn, Lieutenant Governor of the province. He served as prothonotary of this first

court and continued to fill the office until 1775, when he resigned to take part in the stirring events of that year.

In the controversy between Pennsylvania and Virginia over the western and southwestern boundaries of Pennsylvania St. Clair was not only the fast friend of the Pennsylvania proprietaries but he displayed great activity in protecting their interests. Early in 1774, when John Connolly, the agent of Lord Dunmore, Governor of Virginia, took possession of Fort Pitt, which had been abandoned by the British Government because of the difficulties then pending between the colonies and the mother country, and issued a proclamation calling on the people to sustain him, St. Clair, one of the justices of the peace of Westmoreland county, issued a warrant and had him arrested and confined in the jail at Hannastown, then the county-seat of Westmoreland county, from which he was released upon entering bail for his appearance at court. Connolly afterwards gave further trouble, which the historians of Pennsylvania have fully described.

We next hear of St. Clair after the battle of Lexington, which occurred on April 19, 1775. Two meetings of the citizens of Western Pennsylvania were held in May of that year to protest against British oppression of the colonies. One meeting was held at Pittsburgh and the other at Hannastown. Both meetings were well attended. It is certain that St. Clair attended the Hannastown meeting. At both meetings resolutions were unanimously adopted which expressed sympathy with the people of Massachusetts in their opposition to the oppressive measures of the British Government and also promised aid in resisting further oppression of any of the colonies. The exact text of the Hannastown resolutions has been transcribed for these pages by Dr. C. H. Lincoln, of Washington, from Peter Force's *American Archives*, (4th series, vol. 2, pages 615 and 616,) and is literally as follows.

MEETING OF THE INHABITANTS OF WESTMORELAND, PENNSYLVANIA.

At a general meeting of the inhabitants of the County of *Westmoreland*, held at *Hanna's Town* the 16th day of *May*, 1775, for taking into consideration the very alarming situation of this Country, occasioned by the dispute with *Great Britain*:

Resolved unanimously, That the Parliament of *Great Britain*, by several

late Acts, have declared the inhabitants of the *Massachusetts-Bay* to be in rebellion, and the Ministry, by endeavouring to enforce those Acts, have attempted to reduce the said inhabitants to a more wretched state of slavery than ever before existed in any state or country. Not content with violating their constitutional and chartered privileges, they would strip them of the rights of humanity, exposing lives to the wanton and unpunishable sport of a licentious soldiery, and depriving them of the very means of subsistence.

Resolved unanimously, That there is no reason to doubt but the same system of tyranny and oppression will (should it meet with success in the *Massachusetts-Bay*) be extended to every other part of *America*: it is therefore become the indispensable duty of every *American*, of every man who has any publick virtue or love for his Country, or any bowels for posterity, by every means which *God* has put in his power, to resist and oppose the execution of it; that for us we will be ready to oppose it with our lives and fortunes. And the better to enable us to accomplish it we will immediately form ourselves into a military body, to consist of Companies to be made up out of the several Townships under the following Association, which is declared to be the Association of *Westmoreland County*:

Possessed with the most unshaken loyalty and fidelity to His Majesty, King *George* the Third, whom we acknowledge to be our lawful and rightful King, and who we wish may long be the beloved Sovereign of a free and happy people throughout the whole *British* Empire; we declare to the world that we do not mean by this Association to deviate from that loyalty which we hold it our bounden duty to observe; but, animated with the love of liberty, it is no less our duty to maintain and defend our just rights (which, with sorrow, we have seen of late wantonly violated in many instances by a wicked Ministry and a corrupted Parliament) and transmit them entire to our posterity, for which purpose we do agree and associate ourselves together:

1st. To arm and form ourselves into a Regiment or Regiments, and choose officers to command us in such proportion as shall be thought necessary.

2d. We will, with alacrity, endeavour to make ourselves masters of the manual exercise, and such evolutions as may be necessary to enable us to act in a body with concert; and to that end we will meet at such times and places as shall be appointed either for the Companies or the Regiment, by the officers commanding each when chosen.

3d. That should our Country be invaded by a foreign enemy, or should Troops be sent from *Great Britain* to enforce the late arbitrary Acts of its Parliament, we will cheerfully submit to military discipline, and to the utmost of our power resist and oppose them, or either of them, and will coincide with any plan that may be formed for the defense of *America* in general, or *Pennsylvania* in particular.

4th. That we do not wish or desire any innovation, but only that things may be restored to and go on in the same way as before the era of the Stamp Act, when *Boston* grew great, and *America* was happy. As a proof of this disposition we will quietly submit to the laws by which we have been accustomed to be governed before that period, and will, in our several or associate capacities, be ready when called on to assist the civil magistrate in carrying the same into execution.

5th. That when the *British* Parliament shall have repealed their late obnoxious Statutes, and shall recede from their claim to tax us, and make

laws for us in every instance, or when some general plan of union and reconciliation has been formed and accepted by *America*, this our Association shall be dissolved ; but till then it shall remain in full force ; and to the observation of it we bind ourselves by every thing dear and sacred amongst men. No licensed murder ! no famine introduced by law !

Resolved, That on *Wednesday*, the twenty-fourth instant, the Township meet to accede to the said Association, and choose their officers.

In a letter from St. Clair to Joseph Shippen, Jr., dated at Ligonier, on May 18, 1775, St. Clair says : "Yesterday we had a county meeting and have come to resolutions to awe and discipline, and have formed an Association, which I suppose you will soon see in the papers. God grant that an end may be put to any necessity for such a proceedings. I doubt their utility and am almost as much afraid of success in this contest as being vanquished." A letter from St. Clair to Governor John Penn is dated at Ligonier, on May 25, 1775, and in part reads as follows : "We have nothing but musters and committees all over the country, and everything seems to be running into the wildest confusion. If some conciliating plan is not adopted by the Congress America has seen her golden days ; they may return, but will be preceded by scenes of horror. An Association is formed in this county for defense of American liberty. I got a clause added by which they bind themselves to assist the civil magistrates in the execution of the laws they have been accustomed to be governed by."

It will be noticed that St. Clair's letter to Joseph Shippen is dated on May 18, and that he says that the Han-nastown resolutions were adopted "yesterday," the 17th, whereas it is said in the *American Archives* that the Han-nastown meeting occurred on May 16. The date given by St. Clair may have been a slip of his pen.

The extracts from St. Clair's letters show that he was not in sympathy with the spirit of some parts of the Han-nastown declaration. Like many other opponents of British oppression at that time he doubtless hoped that the British Government could be induced to change its policy in dealing with the colonies. In this hope he was soon to be undeceived, when he promptly and manfully took his stand with the advocates of colonial independence. Then

began his remarkable career, to use his own phrase, "for defense of American liberty."

Soon after the meeting at Hannastown active measures were taken throughout that small part of Western Pennsylvania which was then partly settled to organize the able-bodied men into military companies. In this work of preparation St. Clair took an active part. At the same time the Continental Congress, in session at Philadelphia, resolved to raise an army to defend the colonies against British aggression, and of this army Washington was appointed commander-in-chief. Pennsylvania was called upon for its quota of troops, 4,300, and afterwards during the same year for four additional regiments. On January 3, 1776, St. Clair was chosen colonel of the Second Pennsylvania Regiment and was soon ordered to take part with his regiment in the disastrous expedition to Canada which was commanded by General John Sullivan. In this campaign St. Clair acquitted himself with great credit in aiding to save Sullivan's whole army from capture after the disastrous affair at Three Rivers. For this service he was appointed in August of this year a brigadier general, joining the main army under Washington, who was then retreating across New Jersey before General Howe. Albert says that St. Clair "fought under the eyes of the commander-in-chief in the closing battles of this campaign, at White Plains, at Trenton, and at Princeton," and adds that this campaign made St. Clair a major general. Boucher says that St. Clair suggested to Washington the movement which brought on the battle of Princeton. On February 19, 1777, he was commissioned a major general. In March of the same year he was detailed by Washington as adjutant general of the army for a short time.

In 1777 St. Clair was in command at Ticonderoga, from which position he was compelled to withdraw but was acquitted of all blame by a court martial; he participated in the battle of Brandywine in the same year as a volunteer aide to Washington and had a horse shot from under him; and he was at Valley Forge during the terrible winter that followed. *Johnson's Cyclopædia* epitom-

mizes the remainder of his services during the Revolution as follows: He assisted Sullivan in 1779 in fitting out his expedition against the Six Nations; he was a member of the court martial which tried Major André; he was a commissioner to treat with the British at Amboy in March, 1780; in August of that year he was assigned to the command of La Fayette's corps of light infantry during the latter's absence; in October of the same year he was assigned to the command of West Point; he took a conspicuous part in the suppression of the mutiny in the Pennsylvania Line in January, 1781; he distinguished himself in the Southern campaign which terminated at Yorktown; and he subsequently served with distinction in the Southern campaign under Greene. Albert says that St. Clair was also intrusted by Washington with the arduous duty of organizing the levies of Pennsylvania and New Jersey and sending them to the field. He appears to have possessed McClellan's talent for organizing troops.

It is a fact of great significance that throughout the whole period of the Revolutionary war St. Clair possessed the confidence of Washington in an eminent degree, who frequently honored him with important appointments.

The war over St. Clair retired to private life. When he entered the army he had removed his family to Pottstown, then in Philadelphia county but now in Montgomery county. In 1783 he was elected a member of the Council of Censors of Pennsylvania for the county of Philadelphia, his colleague being Frederick A. Muhlenberg. General Wayne was a member of the Council from Chester county. On January 2, 1784, the Council appointed a committee of five to report upon those articles of the Constitution of 1776 which were defective and required amendment, and of this committee St. Clair was a member. The work done by this committee was arduous and thorough and paved the way for the Constitution of 1790. In the votes upon the report of the committee Muhlenberg, Wayne, and St. Clair always voted together.

In 1785 St. Clair was elected a member of the Continental (Confederate) Congress and in 1787 he was chosen its president, the position once held by John Hancock.

On July 13, 1787, the Congress over which he presided enacted the celebrated "ordinance for the government of the territory of the United States northwest of the river Ohio." This ordinance provided that "there shall be appointed, from time to time, by Congress, a Governor, whose commission shall continue in force for the term of three years, unless sooner revoked by Congress." The Congress over which St. Clair presided appointed him the first Governor of the Northwest Territory, and on July 9, 1788, he arrived at Marietta, which had been designated as the capital of the Territory. St. Clair held his commission as Governor until 1802, a period of more than fourteen years, when, being a Federalist of strong convictions and outspoken in his expression of them, he was removed by President Jefferson. The notification of his removal was written by James Madison, Secretary of State, on November 22, 1802. In a few months thereafter the State of Ohio was organized. St. Clair's incumbency of the office of Governor therefore embraced practically the whole period of Ohio's territorial existence. He gave to Cincinnati its beautiful name, and Hamilton county, in which the city is situated, was also named by him in honor of Alexander Hamilton.

Not having lost his citizenship in Pennsylvania St. Clair was supported for Governor by the Federalists of that State in the election of 1790. The supporters of General Mifflin were, however, overwhelmingly successful.

In 1791 Governor St. Clair was appointed commander-in-chief of the army and ordered to proceed against the Miami and other Indians who had defeated General Harmar the year before. On November 4 St. Clair was himself defeated. Referring to the movements of St. Clair's army Boucher says: "Shortly after they left Fort Jefferson one of the militia regiments deserted bodily. Washington Irving, in speaking of these militia, says that they were picked and recruited from the worst element in Ohio. Enervated by debauchery, idleness, drunkenness, and by every species of vice it was impossible to make them competent for the arduous duties of Indian warfare. They were without discipline and their officers were not accus-

tomed to being under a commander. They were useless in a campaign, yet St. Clair thought it would disband his army or at least greatly impair its usefulness to allow them to desert at will, so he weakened his forces greatly by sending the First Regiment of Regulars in pursuit of the deserters. His army then numbered about fourteen hundred, with perhaps three hundred militia."

St. Clair's conduct during the engagement was in every way creditable. Those who would know the details of this action will find them fully set forth in St. Clair's official report, which he sent to President Washington under date of October 6, 1791, and which the President transmitted to Congress on December 12, 1791. The text of this remarkable report will be found in the *Early History of Western Pennsylvania and of the West*, by "a gentleman of the bar," (I. D. Rupp,) printed in 1846. A committee of Congress exonerated St. Clair of all blame for the defeat of his army, its report being as follows: "The committee conceive it but justice to the commander-in-chief to say that in their opinion the failure of the late expedition can in no respect be imputed to his conduct either at any time before or during the action, but that, as his conduct in all the preparatory arrangements was marked with peculiar ability and zeal, so his conduct during the action furnishes strong testimonies of his coolness and integrity."

Generals can not always win victories. Oftentimes, too, the result of a battle appears to turn upon accident rather than upon skill or valor. The decisive battle of Waterloo is a familiar illustration. In our own country Forbes's movement against Fort Du Quesne was seriously imperiled by the defeat of his advanced detachment under Colonel Grant. Bouquet narrowly escaped at Bushy Run the fate of St. Clair. Washington was compelled to surrender to the French and Indians at Great Meadows, and he was repeatedly defeated during the Revolutionary struggle. McDowell lost the first Bull Run battle, Burnside failed at Fredericksburg, and Hooker failed at Chancellorsville, although these generals were all good soldiers. General Grant met with a signal defeat on the first day

at Pittsburg Landing and afterwards at Cold Harbor, and Sherman failed at Kenesaw Mountain. Lee lost the battle of Antietam and his star set at Gettysburg. St. Clair was defeated because he was opposed by about 2,500 Indians and because his undisciplined militia became demoralized at the first fire. He was not defeated because of any lack of generalship or personal bravery in himself. Wayne afterwards defeated the Ohio Indians because he had under his command a larger force than St. Clair and because this force had been thoroughly trained for its work before it moved into the Indian country.

Returning to Ligonier valley in 1802 or 1803 St. Clair established his family in a new home he had built at The Hermitage, about one and a half miles north of Ligonier. In the latter year he built at this place a furnace for the manufacture of iron from the ores that were found in the vicinity, the product of the furnace being chiefly stoves and other castings. This furnace was in blast in 1806. In 1808 St. Clair's debts pressed him to the wall and he was sold out by the sheriff, not even his household goods escaping the sheriff's hammer. Boucher says that "the most lamentable feature of his embarrassment is that his debts were nearly all contracted in the interests of the Republic, and should have been paid by the State or the nation and not by St. Clair." In a memorial to the General Assembly of Pennsylvania St. Clair himself said that he had freely used his own means in supplying the forts and blockhouses of Westmoreland county with arms and ammunition at the outbreak of the Revolution. While Governor of the Northwest Territory he again used his own means to meet the obligations of Indian treaties. In the sale of his real estate at the beginning of the Revolution he lost heavily through the depreciation of Continental currency. Lands that he had sold for £2,000, payable in installments, yielded only £100. Albert says that when he entered the army he left to his neighbors for their use a flouring mill that he had built on Mill creek and that when he returned after the war it was a pile of rubbish.

But the saddest part of St. Clair's financial failure is told by Albert in these words: "When, in the darkest

days of the Revolution, Washington, seeing his army melting away like snow, appealed to him to save to him the Pennsylvania Line, the flower of the army, St. Clair immediately responded by advancing the money for recruiting and for bounty, and by St. Clair's and Col. William Butler's individual exertions and influence their object was accomplished. To part of this claim the Government afterwards pleaded the statute of limitations. . . . When the army for the campaign of 1791 had collected together, and it was found that the sum authorized by Congress for the purpose was too small for the exigencies of the project, he personally guaranteed to the quartermaster-general, James O'Hara, the repayment of a large sum in order that the army might be victualed and supplied. When he presented his account in 1799 for payment he was informed by the Secretary of the Treasury that there 'were no moneys appropriated by the Legislature to pay such further disbursements.' On this subject St. Clair says that he became personally liable to the contractor, O'Hara, to whom he gave his bond for \$7,042, on the express promise of the Secretary of the Treasury that it should be repaid with interest. This bond remaining unpaid suit was brought and judgment was obtained against St. Clair by his own confession for \$10,632.17, debt and interest. Upon this judgment execution was from time to time issued, and upon it the entire remaining part of all his real estate was sold. James O'Hara, by his lawyer, bought all the property."

Boucher continues the pitiful story of St. Clair's distress as follows: "The Assembly of Pennsylvania pensioned him, and in 1817, a year before his death, increased the pension to \$50 per month. Congress the same year granted him \$60 per month and dated it back a year. There being no law to forbid it this was attached by his creditors before it left the hands of the Treasurer, and St. Clair never received one cent of it. Soon after the sale of his property he was turned out of house and home. Daniel St. Clair, his son, owned a tract of land on the Chestnut ridge, above the Four Mile run, and to this the old man and his family removed. Broken with the storms of

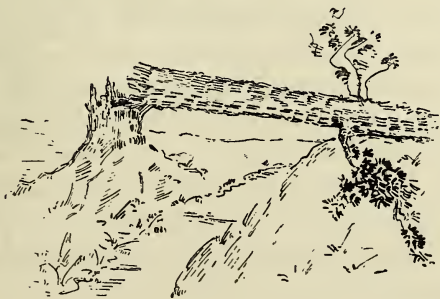
more than three-score years and ten, saddened by the memories of the past, and denied by ingratitude what was justly due him from his State and nation, he quietly awaited the last roll call. To secure bread for his family he entertained travelers, though his house was but little more than a four-roomed log cabin."

Albert preserves the following description of General St. Clair in his old age, written by Elisha Whittlesey, who once represented the Ashtabula district in Congress, contained in a letter which he wrote to Senator Richard Brodhead on May 16, 1856: "In 1815 three persons and myself performed a journey from Ohio to Connecticut on horseback in the month of May. Having understood that General St. Clair kept a small tavern on the ridge east of Greensburg I proposed that we stop at his house and spend the night. He had no grain for our horses, and after spending an hour with him in the most agreeable and interesting conversation respecting his early knowledge of the Northwestern Territory we took our leave of him with deep regret. I never was in the presence of a man that caused me to feel the same degree of veneration and esteem. He wore a citizen's dress of black of the Revolution; his hair was clubbed and powdered. When we entered he arose with dignity and received us most courteously. His dwelling was a common double log house of the western country that a neighborhood would roll up in an afternoon. Chestnut ridge was bleak and barren. There lived the friend and confidant of Washington, the ex-Governor of the fairest portion of creation. It was in the neighborhood, if not in view, of a large estate at Ligonier that he owned at the commencement of the Revolution, and which, as I have sometimes understood, was sacrificed to promote the success of the Revolution. Poverty did not cause him to lose self-respect, and were he now living his personal appearance would command universal admiration."

Neither Western Pennsylvania nor the whole State of Pennsylvania has honored the memory of this great man as it deserves to be honored. It is painful to reflect that two successive Governors of Pennsylvania have in recent

years vetoed bills of the General Assembly appropriating a small sum of money to pay for a suitable monument in his honor. The humble and fast decaying sandstone monument over his remains in an abandoned graveyard at Greensburg, erected by the Masonic Fraternity, bears this stinging inscription: "The earthly remains of Major General Arthur St. Clair are deposited beneath this humble monument, which is erected to supply the place of a nobler one due from his country." The remains of the general's wife lie beside him in a wholly neglected grave. She died on September 18, 1818, surviving her husband only nineteen days. Westmoreland county is not wholly free from blame for neglecting to do what the State and the whole country should have done.

When the citizens of Bloody Run, in Bedford county, properly thought that the name of their town should be changed they looked not to the history of Pennsylvania for a new name but to Massachusetts, and they now live in Everett. When it seemed to be necessary to change the one-hundred-year-old name of Nineveh, in Westmoreland county, some person or persons having authority turned to New York for a name and called the little town Seward. When the Pennsylvania Railroad was built through Westmoreland county there was a modest hamlet on the line of the road called St. Clair, so named in honor of General St. Clair, whose home had been not many miles away. But the name of this town has been erased from the map and dropped from the railroad time table.



CHAPTER XXX.

ALBERT GALLATIN, STATESMAN.

ALBERT GALLATIN, who was born in Geneva, Switzerland, on January 29, 1761, and died at Astoria, Long Island, on August 12, 1849, ranks foremost among all the statesmen of Western Pennsylvania in the length and variety of his public services and in the honors that were conferred upon him. Coming to our country in 1780 he settled in 1784 on George's creek, Fayette county, where he met Washington in September of that year. In 1786 he bought a farm of 400 acres at Friendship Hill, near New Geneva, on the Monongahela, in the same county, on which he resided, when not absent on official duties, for about forty-two years, until 1828.

Soon after coming to Pennsylvania Gallatin became an active participant in the political movements of the time, identifying himself with the party of Thomas Jefferson, of which he soon became a leader. He was a delegate from Fayette county to the Constitutional Convention of 1790. This convention was composed of very able men and Gallatin took a prominent part in its deliberations. He successfully opposed the insertion of the word "white" as a prefix to "freeman" in defining the elective franchise. In 1790, 1791, and 1792 he was elected a member of the General Assembly. In 1793, when not thirty-three years old, he was elected a member of the United States Senate, in which he served from December 2, 1793, to February 28, 1794, when he was declared ineligible because he had not been a citizen of the United States for the period of nine years as was required by the Constitution. He was succeeded in the Senatorship by James Ross, of Pittsburgh, a Federalist. Gallatin actively opposed the Whisky Insurrection of 1794, although at first sympathizing with the peaceable opposition to the excise tax on whisky. In that year he was again chosen a member of the General Assembly from Fayette county. In December, 1795, he took

his seat as a member of the House of Representatives of the Fourth Congress, having been elected by a most complimentary vote in 1794 from the district of Allegheny and Washington, in which he did not reside. This was a great honor. In the House he at once took high rank. He was three times re-elected a Representative in Congress, in 1796, 1798, and 1800, from the same district as that above mentioned, Greene county having been added to Allegheny and Washington in 1796. He became the leader of his party in the House.

From 1801 to 1814 Mr. Gallatin was Secretary of the Treasury under Jefferson and Madison, holding this position, with honor to himself and credit to the country, for a longer period than any other person has held it from the foundation of the Government. While Secretary of the Treasury he was the ardent and influential friend of the National Road, from Cumberland to the West. He was, indeed, the author of the scheme for building the road. In a speech in the House on January 27, 1829, Andrew Stewart said: "Mr. Gallatin was the very first man that ever suggested the plan for making the Cumberland Road." In a letter which Gallatin himself wrote to David Acheson, of Washington, Pennsylvania, on September 1, 1808, he said that he had "with much difficulty obtained the creation of a fund for opening a great western road and the act pointing out its general direction." In 1809 President Madison offered Gallatin the portfolio of the State Department, which he declined, preferring to remain at the head of the Treasury Department.

In 1813, while still Secretary of the Treasury, Gallatin was appointed by Madison one of three commissioners to Russia, the Emperor Alexander having offered his services in promoting the restoration of peace between Great Britain and the United States. Negotiations to this end failing, Gallatin was appointed in the following year one of five commissioners to treat directly with Great Britain, and these commissioners signed the Treaty of Ghent in December, 1814. It is claimed by his biographers that his was the master hand in the preparation of the treaty. In February, 1814, Gallatin ceased to be Secretary of the

Treasury. In 1815 he was appointed United States Minister to France, and this position he held until 1823, when he returned to the United States and to Friendship Hill. In 1824 William H. Crawford, Secretary of the Treasury under Monroe, was nominated for the Presidency by many members of the Republican party of that day and Gallatin was their choice for the Vice Presidency. After some hesitation, in a letter written from his home in Fayette county, he finally declined to be a candidate. In May, 1825, Governor Shulze offered Gallatin the position of canal commissioner, which he declined. In the same month he received La Fayette in an address of welcome at Uniontown, and a day or two afterwards escorted him to Friendship Hill, where La Fayette remained over night.

In May, 1826, President Adams appointed Mr. Gallatin United States Minister to Great Britain, and this position he accepted. His special mission to Great Britain having been accomplished he returned to this country in November, 1827, although the President earnestly desired him to remain. In 1828 he removed his residence to New York City, where he continued to reside until his death. With this removal his active connection with public affairs virtually ended, although in 1828 and 1829, at the instance of President Adams, he devoted much time and his great ability to an exhaustive study of our troubles with Great Britain concerning the Northeastern boundary, and this subject he again carefully investigated in 1840, when he published "an elaborate dissertation upon it, in which he treated it historically, geographically, argumentatively, and diplomatically," his work contributing materially to the final adjustment of the controversy in the celebrated Webster and Ashburton treaty of 1842. Subsequently he published a pamphlet on the "Oregon Question" which commanded public attention.

In 1831 Gallatin was chosen president of the National Bank, of New York, and this position he retained until 1839, passing with great credit through the most trying financial crisis in our history. He was succeeded in the presidency by his son, James Gallatin. During the remainder of his life Gallatin was active in many fields of

usefulness. In 1842 he founded the American Ethnological Society. In 1843 he was chosen president of the New York Historical Society. In 1844 he presided at a mass meeting in New York to protest against the annexation of Texas as slave territory, and in 1847 he discussed the whole subject of the annexation of Texas in a pamphlet entitled "Peace with Mexico." He had always held "the pen of a ready writer." In the early years of his life, as also in the closing part of his career, he made valuable contributions to the discussion of financial and scientific questions. When he died in 1849 he was far advanced in his 89th year.

Gallatin early showed commendable enterprise in encouraging the establishment of manufacturing industries at his new home in Western Pennsylvania. In 1796 or 1797 he established at New Geneva one of the first works west of the Alleghenies, if not the first, for the manufacture of window glass. The Geneva works continued in operation for many years. In 1799 or 1800 Gallatin established at New Geneva, in company with Melchor Baker, a practical gunsmith, a factory for making muskets, broadswords, etc., which also continued in operation for several years, and which at one time employed between fifty and one hundred workmen. After these works had been in operation for about two years Gallatin withdrew from the partnership, his duties as Secretary of the Treasury not permitting him to give the enterprise further attention.

Nearly all the public services of Gallatin were rendered to his adopted country while he was a citizen of Western Pennsylvania, and these services were of an exalted character. Western Pennsylvania soon recognized his great ability, and the distinction it conferred upon him brought him the nation's recognition. The whole State of Pennsylvania may well be proud of his achievements and of his unswerving devotion to the best interests of his country. He was not always right, as in his opposition to our protective tariff policy, but even in this opposition we are told by Judge Veech that, although "his free trade proclivities were fixed, yet he did not obtrude them in his State papers." He believed in a revenue tariff.

CHAPTER XXXI.

A MAN OF LETTERS.

ANDREW CARNEGIE, the most enterprising, most courageous, and most successful of all American manufacturers, was born at Dunfermline, in the Lowlands of Scotland, on November 25, 1835, and came with his father's family to Pittsburgh in 1848. His father was a weaver.

No writer upon historical subjects can dwell upon the remarkable industrial development of Pennsylvania, or upon its greatness in any respect, and not have his attention arrested by the industrial achievements of Andrew Carnegie in the decades that are gone and by the great good that he has done with the wealth that his own genius, and not Fortune's wheel, has placed in his hands. Down to April 1, 1908, his philanthropic gifts had amounted to a total of \$150,000,000. Mr. Carnegie's life has been mainly passed in Western Pennsylvania. It was there that his great work as an industrial leader was done. The whole world has long known of his phenomenal success as a creative business man and of his work as the greatest of all philanthropists; it knows of the libraries and technical schools that he has established and of his generous contributions to other schools of learning; and again it knows of him as a publicist who is familiar with economic and financial questions and who can discuss them from the rostrum or in the printed page. But one of his accomplishments it knows only imperfectly. Mr. Carnegie is a man of letters. He is not only a builder of libraries but he is familiar with the contents of books, and he is himself a ready and an industrious writer upon many subjects.

In the *Youth's Companion* for April 23, 1896, Mr. Carnegie has told the story of his childhood and boyhood and his early career as a business man—how he was first a "bobbin boy" in a cotton factory in Allegheny City at \$1.20 a week, going to work in the morning

when it was still dark and returning home late in the evening after dark; how next he "fired" a boiler in the cellar of a bobbin factory in the same city and also "ran" the engine; and how, when he was fourteen years old, he became a telegraph messenger in Pittsburgh at \$3 a week, soon becoming an expert telegraph operator. The remainder of Mr. Carnegie's story for boys tells of his steady progress toward financial independence.

The telegraph boy had not graduated from a high school or even a grammar school; he had not dreamed of ever attending an academy or a college; but he had quick perceptions and a love of good books. In those days there were no public libraries in Pittsburgh or Allegheny City to which ambitious boys could have access, but Mr. Carnegie has acknowledged his great indebtedness to Colonel Anderson, of the latter city, who opened his collection of a few hundred books to poor boys. Mr. Carnegie's ready command of the English language and his full vocabulary in after years can be traced not to the training of schools but to his telegraphic experience, to the reading of good books, and to contact with bright men, added to a fine literary sense which came to him by inheritance. If "poets are born, not made," so also are the writers of good prose.

Mr. Carnegie's biographer, Mr. Barnard Alderson, says that Mr. Carnegie has written five books, in addition to a large number of magazine articles. If these magazine articles were bound together they would make probably four more books of large size. Those that Mr. Alderson has mentioned are *Round the World*, (1879,) *Our Coaching Trip*, (1882,) *Triumphant Democracy*, (1886,) *The Gospel of Wealth*, (1900,) and *The Empire of Business*, (1902.) As a man is known by the company he keeps so an author may be studied in the books he has written. We propose, therefore, to make some extracts from the books mentioned and from the magazine articles that will illustrate Mr. Carnegie's literary tastes and embody his opinions on some important subjects, and also from another book, *More Busy Days*, also a book of opinions, which was intended for circulation only in Great Britain.

Mr. Carnegie's *Round the World* is in the form of a journal of his trip around the world, with one companion, beginning in October, 1878, and ending in May of the following year. The trip commenced at Pittsburgh and encircled the globe by way of San Francisco, the Pacific ocean, China, Japan, India, Egypt, Italy, France, England, and the Atlantic ocean, and occupied eight months. The book records Mr. Carnegie's impressions of the countries and the people he visited, and contains many descriptive and philosophic passages of great interest to those who are debarred the pleasure of going away from home "far countries for to see." Mr. Carnegie's vessel steamed up Tokio bay in November and landed at Yokohama, where his narrative really begins. He was impressed by the magnificent bay, the glorious sky overhead, and a sight of the great Japanese mountain, Fusi-yama, the whole forming a combination of scenic grandeur that is seldom if ever equaled. He writes: "The sail up this bay is never to be forgotten. The sun set as we entered, and then came such a sky as Italy can not rival. Fusi-yama itself shone forth under its rays, its very summit clear, more than 14,000 feet above us." In India Mr. Carnegie visited the Taj Mahal and other wonders, which he describes with enthusiasm. Wherever he went in the Orient, his attention was particularly directed to the economic and social conditions of the people he visited. The whole volume forms an entertaining and instructive book of travels, for the most part among oriental people who were little understood at the time it was written, thirty years ago. Bayard Taylor has not written anything better in his books of foreign travel.

Triumphant Democracy is a philosophical discussion and a glowing eulogy of the political institutions of the United States, accompanied from beginning to end by a mass of historical and statistical information concerning the leading occupations of the people of the United States, the natural resources of the country, and such comprehensive subjects as education, literature, art, music, railroads, foreign relations, pauperism and crime, etc. Much has been said in praise of James Bryce's *American Com-*

monwealth, and justly so, but in *Triumphant Democracy* we have a work that deserves to rank with that of the great Englishman. The other books mentioned by Mr. Alderson, *Our Coaching Trip*, *The Gospel of Wealth*, and *The Empire of Business*, illustrate Mr. Carnegie's versatility, his love of nature, his shrewd business sense, his freedom from cant, and his charity in all things. *The Gospel of Wealth* comprises a series of essays and addresses which deal with some of the serious problems of life and were intended mainly for the benefit of young men. *The Empire of Business* was republished in German, French, and Italian, and was largely circulated.

Before taking up *More Busy Days* we turn to some of Mr. Carnegie's contributions to magazine literature which were published in *The North American Review* for 1898 and 1899, and were respectively entitled "The Parting of the Ways" and "Americanism versus Imperialism."

Before the Spanish war had come to an end in August, 1898, when a preliminary treaty of peace, or protocol, was signed at Washington, the question arose what disposition was to be made of the Philippine Islands. The protocol was signed on Friday, August 12, and on Saturday, August 13, Manila was bombarded and surrendered, word of the suspension of hostilities not having reached Admiral Dewey and General Merritt. The battle of New Orleans was fought on January 8, 1815, in ignorance of the fact that a treaty of peace between the United States and Great Britain had previously been signed at Ghent. So it was at Manila; Spain had already admitted defeat. Two parties were at once formed in this country, one the Administration party, which favored the acquisition of the Philippines, and the other, composed of both Republicans and Democrats, and known as the Anti-Imperialists, which opposed acquisition. Mr. Carnegie promptly identified himself with the latter party. In the end the Administration policy prevailed and we annexed the islands, paying \$20,000,000 for them to Spain. Some of Mr. Carnegie's arguments against annexation may well be reproduced, to illustrate his controversial style as well as to present his reasons for opposing the policy of the Administration.

In "The Parting of the Ways," published in August, 1898, Mr. Carnegie begins his argument as follows: "Twice only have the American people been called upon to decide a question of such vital import as that now before them. Is the Republic, the apostle of triumphant democracy, of the rule of the people, to abandon her political creed and endeavor to establish in other lands the rule of the foreigner over the people—triumphant despotism? Is the Republic to remain one homogeneous whole, one united people, or to become a scattered and disjointed aggregate of widely separated and alien races? Is she to continue the task of developing her vast continent until it holds a population as great as that of Europe, all Americans, or to abandon that destiny to annex, and to attempt to govern, other far distant parts of the world as outlying possessions which can never be integral parts of the Republic? Is she to exchange internal growth and advancement for the development of external possessions which can never be really hers in any fuller sense than India is British or Cochinchina is French?"

All these questions Mr. Carnegie proceeded to answer with an array of facts and deductions that should have carried conviction to the minds of those who were then in control of the Government at Washington, but the annexation spirit prevailed, as already stated. Early in 1899 Mr. Carnegie continued his protest against annexation in two installments in the *Review*. In the course of his argument he said:

"I write upon the eve of the birthday of the greatest public man of the century, perhaps of all the centuries if his strange history be considered—Abraham Lincoln. Washington, Franklin, and Jefferson may have become back numbers, as we have been often told, for, as men of the past century, they could not know our destiny; but here is a man of our own time whom many of us were privileged to know. Are his teachings to be discarded for those of any now living who were his contemporaries? Listen to him: 'No man is good enough to govern another without that man's consent. I say this is the leading principle, the sheet-anchor, of American republican-

ism.' It is not fashionable for the hour to urge that the 'consent of the governed' is all-important; but it will be fashionable again one of these days. It seems as if Lincoln were inspired to say the needful word for this hour of strange subversion of all we have hitherto held dear in our political life. Our 'duty' to bear the 'white man's burden' is to-day's refrain, but Lincoln tells us: 'When the white man governs himself that is self-government; but when he governs himself and also governs another man that is more than self-government, that is despotism.' Lincoln knew nothing of the new 'duty' and new 'destiny,' or whether it is 'duty' which makes 'destiny' or 'destiny' which makes 'duty;' but he knew the old doctrines of republicanism well.

"One other lesson from the Great American: 'Our reliance is in the love of liberty which God has planted in us. Our defense is in the spirit which prizes liberty as the heritage of all men in all lands everywhere. Those who deny freedom to others deserve it not for themselves, and under a just God can not long retain it.' Are these broad, liberty-loving, and noble liberty-giving principles of Americanism, as proclaimed by President Lincoln, to be discarded for the narrow, liberty-denying, race-subjecting, Imperialism of President McKinley when the next appeal is made to the American people? We have never for one moment doubted the answer, for they have never failed to decide great issues wisely nor to uphold American ideals. Never had this nation greater cause to extol Abraham Lincoln than upon this the ninetieth anniversary of his birth, and never till to-day had it cause to lament that a successor to the Presidential chair should attempt to subvert his teachings."

This severe criticism of President McKinley was deserved. It will be the judgment of calm and dispassionate history that a strong man in the Presidential office at that time—a man like Thomas B. Reed—would have heeded the patriotic and wise advice of Mr. Carnegie and others and permitted the people of the Philippines to work out their own destiny. Without hunting for trouble in dealing with an alien Asiatic race, six thousand miles

from our Pacific coast, we had at home trouble enough of our own with ten millions of negroes. Our "duty" to these negroes we were sadly neglecting then and are neglecting to-day. We are now paying the price of Philippine annexation in the great cost of governing the Filipinos, including the lives of our soldiers lost in subduing them and in keeping them subdued. We now maintain an army of about 15,000 soldiers in the Philippines. The injustice and folly of attempting at the point of the bayonet to coerce the people of the Philippine Islands to accept our standards of civilization Mr. Carnegie forcibly illustrates in the following additional extracts from his articles in *The North American Review*, appearing in 1899.

"One of the great satisfactions in traveling around the world is in learning that God has made all people happy in their own homes. We find no people in any part of the world desirous of exchanging their lot with any other. Upon our journey to the North Cape we stopped in the Arctic Circle to visit a camp of Laplanders in the interior. A guide is provided with instructions to keep in the rear of the hindmost of the party going and returning, to guard against any being left behind. Returning from the camp I walked with this guide, who spoke English and had traveled the world round in his earlier years as a sailor, and was proud to speak of his knowing New York, Boston, New Orleans, and other ports of ours. Reaching the edge of the fjord, and looking down upon it, we saw a hamlet upon the opposite side and one two-story house under construction, with a grass-plot surrounding it, a house so much larger than any of the adjacent huts that it betokened great wealth. Our guide explained that a man had made a great fortune. He was their 'multi-millionaire,' and his fortune was reported to reach no less a figure than 30,000 kroner, (\$7,500,) and he had returned to his native place of Tromso to build this 'palace' and spend his days there. Strange preference for a night six months long! But it was home. I asked the guide which place in all the world he would select if ever he made such a fortune—with a lingering hope that he would name some place in our own favored

land. How could he help it! But his face beamed with pleasure at the idea of ever being rich, and he said finally : 'Ah, there is no place like Tromso !'

"Traveling in Southern India one day I was taken into the country to see tapioca roots gathered and ground for use. Our guide explained to these people that we were from a country so far away, and so different from theirs, that the waters were sometimes made solid by the extreme cold and we could walk upon them; that sometimes it was so intensely cold that the rain was frozen into particles and lay on the earth so deep that people could not walk through it; and that three and four layers of heavy clothes had to be worn. This happy people, as our guide told us, wondered why we stayed there, why we did not come and enjoy life in their favored clime.

"It is just so with the Philippines to-day. It is astonishing how much all human beings the world round are alike in their essentials. These people love their homes and their country, their wives and children, as we do, and they have their pleasures."

More Busy Days is the last of a series of three publications which have been compiled to preserve the leading incidents attending the presentation by Mr. Carnegie of libraries to Scotch, Irish, and English communities, or to commemorate other public functions in Great Britain in which he has participated. These publications were compiled from reports in the daily newspapers. The first, *A Busy Week*, appeared in 1899, the second, *Three Busy Weeks*, in 1902, and the third, *More Busy Days*, in 1903, the series covering twenty-one functions. At many places Mr. Carnegie was received with princely honors. *More Busy Days* contains reports of ceremonies in which Mr. Carnegie participated at Dingwall, Tain, Kilmarnock, and Govan, in Scotland; at Waterford, Limerick, and Cork, in Ireland; and at Barrow, in England. At Govan, at Mrs. John Elder's request, Mr. Carnegie formally opened the Elder free library, which was presented to the people of that place by Mrs. Elder as a memorial to her husband, the late eminent shipbuilder of Govan. At Tain he was received in its town hall, which he had helped to

improve, and at which place a free library was then in course of erection at his expense. At Barrow he presided over the meeting of the Iron and Steel Institute. At the other places mentioned he presented libraries.

At Dingwall Mr. Carnegie's well-known optimism was expressed in these words: "Amid all the ills of life, the poverty and want, the wars which devastate, men still killing each other like wild beasts, as I stand here to-day in old Dingwall the proof comes that humanity has within itself a power or instinct which leads it slowly but surely upward to more improved conditions—that man moves upward and looks upward as the sunflower turns its face to the sun. The masses of the people read books which were before beyond their reach. They have comforts which, to-day the necessities of life, were once the luxuries of the noble; sectarian bitterness—the wars of one religious sect with another, the most cruel in all history we might almost say, have passed away."

The mission of the free library is set forth by Mr. Carnegie in his address at Tain, and in this address he also praises an adjunct of the free library which should especially be found in connection with it in country towns and small cities. He said: "I have become deeply interested in the question of a small hall connected with the library in districts which are not supplied with an independent hall like this. These halls are proving of the greatest service in a direction which I think highly beneficial. My experience is that there is in every community a great fund of latent talent which only needs the right touch from the right man or woman to blossom into fruit. I wish there were in every village or town of Scotland a dramatic club, and, of course, instrumental and choral societies, which would give performances at suitable times for the benefit of the people at nominal prices."

At Limerick Mr. Carnegie again dwelt upon the mission of the free library. He said: "There are librarians and librarians. My experience has revealed this to me most clearly. In one city the free library is a tremendous power for good, reaches all classes, and is the last institution the city would lose. In another its success

is moderate; it exists and does its part, but without soul; it is not a living force and power for good in the one as in the other, and this is owing to the different kind of librarian. I trust you have a librarian here whose heart is in his work, and who does not think that his task is fulfilled as long as there is a poor family in Limerick which is not using the library more or less, and who not only gives out the books asked for but suggests the books his readers should take." At Cork Mr. Carnegie returned to the work of the librarian. He said: "The whole duty of the librarian is not performed when he sees that the applicants receive the books they ask for. There is a much higher task than this that he can perform. He can lead the people to read the books they ought to read."

In his addresses in Protestant Scotland and Catholic Ireland Mr. Carnegie did not hesitate to express his views on religious subjects. At Dingwall he said: "Your Provost has kindly asked me to say just one word, which I have great pleasure in doing. I speak this word under the influence of the Hundredth Psalm, impressively sung, which takes me back to other days as it can take no one who has not been brought up to hear it when a child. I speak a word in sympathy with the spirit of the prayer, in which you were told truly that the Christian religion is founded upon sacrifice. Therefore, when we lay the corner-stone of a free library, I say what Luther said when he nailed his ninety-five theses to the door of Augsburg Cathedral: 'If this thing be of men it will fail, but if it be of God it must stand.'" At Dingwall he also said: "More and more men are drawn to realize that it is not what a man believes, for who can help his beliefs? but what a man does; not what brand of theology he adopts, but what his religion is as translated into life." At Kilmarnock he said: "I would rather take good deeds, an honorable life, and the esteem of friends as my passport to heaven than I would take any doctrines or dogmas in the world." At Limerick he said: "One of the surest proofs of progress in the world is the increased friendliness between the various sects of the one great religion,

Christianity. In the United States this has progressed so far that one scarcely inquires what sect another belongs to, or what views another has upon theology."

Mr. Carnegie's admiration of the character of the Scotch Reformer, John Knox, he freely expressed at Kil-marnock. It is a fine tribute from one who is not a Presbyterian. He said: "No one that reads the history of Scotland will ever, or could ever, underrate the tremendous service which John Knox has rendered to Scotland. He helped us to establish the most precious of the rights and privileges, of the religious ideas, by which men can be moved—the right of private judgment. But the invaluable services of John Knox were not confined to that domain, vital as it is. He declared that he would not rest until there was a public school for the education of the people in every parish in Scotland. Now, the man who did that work, who labored for that end, could never be aught but one of the commanding figures in the first rank of Scotland's benefactors. But John Knox did not stop at schools. When he had established the right of private judgment there came from it the Presbyterian Church, and the greatest tribute I can pay to the Presbyterian Church—and I am not one who believes in any particular kind of theology but a great deal in religion—the greatest tribute I can pay to the Presbyterian Church is that it has remained the church of the people, as democratic as Scotland itself, and has made Scotland what it is."

At Cork Mr. Carnegie laid the memorial-stone of a public library which he was helping to build. At an imposing ceremonial the freedom of the city was conferred upon him. In replying to a complimentary address by the Lord Mayor Mr. Carnegie spoke at some length, and in his remarks he used a Shakespearian quotation which, while conveying the most delicate of compliments, showed not only his ability to think clearly on the spur of the moment but also his familiarity with classical literature. He said: "How shall I find words, my Lord Mayor, to thank you and your people of Cork for the great honor they have just conferred? I shall not attempt it. You

remember when Hamlet says, 'Good, my lord, will you see the players well bestowed?' and Polonius replies, 'My lord, I will use them according to their desert.' Hamlet then says, 'Odd's bodikins, man, much better. Use every man after his desert and who shall 'scape whipping? Use them after your own honor and dignity.' Cork has not treated me after my deserts, but after her own honor and dignity."

Mr. Carnegie's loyalty to his friends is a well-known characteristic. Edwin M. Stanton was one of his early friends. Afterwards Mr. Carnegie bore official relations to Mr. Stanton. At Gambier, Ohio, on April 26, 1906, Colonel John J. McCook, of New York, presented to Kenyon College an oil portrait of Mr. Stanton, who had been a student at this college. Mr. Carnegie was present and delivered a eulogy upon the life and character of Mr. Stanton, at the same time making formal announcement of his creation of an endowment of the Edwin M. Stanton chair of political economy at Kenyon College. In his eulogy, which was an elaborate review of Mr. Stanton's career, Mr. Carnegie dwelt particularly upon the patriotic service which his distinguished subject had rendered to his country in the days of its supreme peril. Mr. Carnegie said of his early acquaintance with Mr. Stanton, who was a native of Steubenville, that "he removed to Pittsburgh in 1847, and it was there in his early prime that I, as telegraph messenger boy, had the pleasure of seeing him frequently, proud to get his nod of recognition as I sometimes stopped him on the street or entered his office to deliver a message."

In the course of his tribute to his early friend Mr. Carnegie says: "On the 13th of January, 1862, without consultation with Mr. Stanton, Lincoln nominated him as Secretary of War." Mr. Carnegie bears this testimony to Mr. Stanton's business methods and to his heart qualities: "Much was said of Stanton's rude treatment of those having business with him. I witnessed his reception of the committee from New York City, which, fearing consequences, visited Washington to urge a postponement of the draft. That was delightfully short. No time

lost. If there was to be rebellion in New York the sooner the Government met and crushed it the better. 'No postponement' was Stanton's reply. His inherent kindness may be judged by his first act. It was to send a commission to Richmond to look after prisoners at the expense of the Government. Ten days later came his order that prisoners of war should receive their usual pay."

Further along in his narrative of Stanton's inestimable services to his country Mr. Carnegie says: "It was not long before Grant was called to Washington by Secretary Stanton and placed at the head of the army. He dined with me at Pittsburgh when he passed westward, and told me that he was to become Lieutenant General with his headquarters at Washington. General Thomas being then the popular idol I said to him: 'I suppose you will place Thomas in command of the West.' 'No,' he said, 'Sherman is the man for chief command. Thomas would be the first man to say so.' Sherman did, indeed, prove that Grant knew his man." Concerning President Johnson's intention to remove Stanton from his position as Secretary of War Mr. Carnegie quotes this sentence from General Grant's letter to the President: "In conclusion, allow me to say, as a friend, desiring peace and quiet, the welfare of the whole country, North and South, that it is, in my opinion, more than the loyal people of this country will quietly submit to, to see the very man of all others in whom they have expressed confidence removed." Stanton refused to resign at that time but after a long controversy he retired.

Mr. Carnegie continues as follows: "Soon afterwards he was appointed Justice of the Supreme Court by President Grant. Resolutions of thanks were passed by both houses and many were the tributes offered to this remarkable man who had given six years of his life and undermined his health in his country's service. Before entering the Cabinet he had amassed considerable means by his profession, but this was exhausted. Beyond his modest residence in Washington he left nothing. Dispensing hundreds of millions yearly he lived without ostentation and he died poor. Offers of gifts and private

subscriptions by those who knew his wants were uniformly rejected. On the morning of the 24th of December, 1869, he breathed his last." We may add that the Senate confirmed Stanton's appointment to the Supreme Court, but he never took his seat, dying four days after his nomination was confirmed. The great War Secretary was literally worn out. He had given his life for his country. He was born at Steubenville on December 19, 1814.

We have quoted sufficiently from Mr. Carnegie's writings and public addresses to show the literary bent of his mind and his facility in the use of good English words and phrases. Up to this time he has established over seventeen hundred libraries, mainly because he believes in the elevating influence of good books and stately library buildings, but partly also because he is himself a lover of books and has found time in an otherwise busy career to indulge his own literary tastes. He will continue to establish many libraries every year. Mr. Carnegie will be regarded by historians as one of the most distinguished of all Americans, and this distinction he has earned partly because he is conspicuously a man of letters as well as a many-sided man of affairs.

In the first paragraph of this chapter we have referred to Mr. Carnegie as the most successful of all American manufacturers. But he was an experienced railroad man before he was a manufacturer. His telegraphic apprenticeship led to his employment by Thomas A. Scott, superintendent of the western division of the Pennsylvania Railroad, (Pittsburgh to Altoona,) as his chief telegraph operator, which position he held for several years, during which time he gained an intimate knowledge of railroad management. Mr. Scott was appointed superintendent of this division on December 1, 1852, and held this office for five years, until December 31, 1857. On January 1, 1858, he was appointed general superintendent of the whole road, Joseph D. Potts succeeding Mr. Scott in charge of the western division and Mr. Carnegie continuing in the position he had held under Mr. Scott. On November 30, 1859, Mr. Potts retired, and on December 1 of the same year Mr. Carnegie succeeded him as superin-

tendent of the western division. Mr. Carnegie was then just 24 years old. For more than five years, until March 31, 1865, he served as superintendent, when he was succeeded by Robert Pitcairn. Mr. Carnegie's term of service embraced virtually the whole period of the civil war. How arduous and important were his duties in connection with the forwarding of troops and supplies for the Government during this long and distressing period can easily be imagined. When he retired from the office of superintendent in 1865 he had spent twelve years in the service of the Pennsylvania Railroad Company.

After the breaking out of the war in 1861 Mr. Scott was called to Washington as Assistant Secretary of War, Simon Cameron being Secretary, but, before this call upon Mr. Scott was made, Mr. Carnegie, upon the recommendation of Mr. Scott, was appointed assistant general manager of military telegraph lines, serving at Washington in this capacity from April 23, 1861, to September 1, 1861, when he resumed his railroad duties. Like his chief, Mr. Scott, he had rendered valuable service in aiding the Government to meet the first shocks of the great struggle.

We add these details of Mr. Carnegie's railroad and telegraphic experience because they have been too much obscured by his phenomenal success as an iron and steel manufacturer; indeed few persons know anything about his telegraphic or his railroad experience in early life.



CHAPTER XXXII.

TWO MEN FROM SOMERSET.

As is well known, most of the towns and cities of Pennsylvania were built upon its principal water courses, their founders having regard to the facilities for transportation which were thus afforded before the days of canals and railroads or even good roads of any kind. Exceptions to this rule are found in those towns which were built a century or more ago upon the roads and turnpikes that connected the eastern and western parts of the State, these roads and turnpikes usually occupying high ground and following the most direct routes. Bellefonte, Ebensburg, Somerset, Indiana, Greensburg, Uniontown, and Washington conspicuously owe their existence to roads and not to rivers. It is an interesting fact that towns so located, away from all the large cities but happening to be county-seats, have produced some of the brightest men of Pennsylvania. Members of the bar in these hill towns have been noted for their ability; their politicians have forged to the front; and the average intelligence of all their inhabitants has been of a high order. In this chapter the reader's attention will be called to the record of two men from Somerset, both natives of that county—Dr. William Elder and Judge Jeremiah S. Black, notable men of whom Western Pennsylvania may well be proud. Both were large men and of commanding presence. Neither of these men received a college education; both were virtually self-educated. In addition to their other attainments both were accomplished writers and have left their impress upon the literature of their native State.

Dr. William Gore Elder, a native of the North of Ireland, was the first physician to locate in the town of Somerset. This was about 1795. His son, William Elder, was born in Somerset on July 23, 1806, and died in Washington City on April 5, 1885. He passed his boyhood in Somerset and on a farm owned by his father. His only

opportunity for mental culture was afforded by association with his father, the range of a fair private library, and the training of the ordinary country school. When about twenty years old he began the study of medicine with Dr. Deane, of Chambersburg, and after some delay he entered upon the practice of his profession, first at Chambersburg and afterwards in the Juniata valley. Dr. Elder was a graduate of Jefferson Medical College. But his literary instincts, his talent for public speaking, and his interest in the political questions of the day soon led him into other fields. These influences eventually made him a lawyer, although he always had a strong love for the medical profession and he never entirely relinquished its practice. In 1838 he made many able speeches in support of the Whig and Anti-Masonic ticket in Pennsylvania. The warmth of the welcome extended to him in Pittsburgh induced him in that year to establish himself in that city in the practice of medicine. So forcible and effective was his oratory, and so popular did he become, that he was elected recorder of deeds for Allegheny county in October, 1839, by a vote that was exceedingly complimentary. Dr. Elder was admitted to the bar at Bedford on August 24, 1842, on motion of Hon. Job Mann, and in the same year he began the practice of his new profession at Pittsburgh, in which city he remained until after the great fire in 1845, when he removed to Philadelphia, which was ever afterwards his home.

Before he located at Pittsburgh and during his residence in that city, and after his removal to Philadelphia, Dr. Elder ardently espoused the anti-slavery cause, and his eloquent voice in opposition to negro slavery and to its extension was heard from many platforms. He was identified with the Liberty party of 1844, the Free Soil party of 1848, and the Republican party of 1855 and subsequent years. In Philadelphia he first found congenial work for his pen in editing two anti-slavery papers, *The Liberty Herald* in 1847 and *The Republic* in 1848, at the same time in both years, as in previous years, speaking frequently from the stump. He continued his editorial work for many years after 1848. His pen found con-

stant and congenial exercise in the preparation of articles, signed "Senior," for *The National Era*, of Washington City, in which he treated calmly and philosophically the questions of the day. For this journal he prepared much editorial matter for a number of years, and occasionally served as its acting editor for considerable periods. He had gradually taken a lively interest in other public questions than the slavery question, writing frequently for the editorial columns of the *New York Tribune* and for some Philadelphia papers. After the establishment of the *Philadelphia Press* by John W. Forney in 1857 he contributed regularly to the editorial columns of that paper, his subjects taking a wide range but embracing chiefly financial and economic questions, including the advocacy of a protective tariff. During this period Dr. Elder and Henry C. Carey became warm friends. When the civil war began in 1861 Secretary Chase sent for Dr. Elder to help him to solve the great problem of paying the national debt, and he remained an official of the Treasury Department until 1866, when he resigned. In 1873 he returned to his work in the Department, remaining until his death in 1885.

In 1860 Dr. Elder prepared for the *Philadelphia Press* a series of articles in explanation of the protective policy which were considered of sufficient importance to justify their publication in pamphlet form with the title of "The Doctrine and Policy of Protection." In June, 1863, at the request of the Union League of Philadelphia, he wrote a pamphlet entitled "Debt and Resources of the United States and the Effect of Secession upon the Trade and Industry of the Loyal States." This was the first work of the kind that undertook to demonstrate that the country could meet all the drain of the civil war and retain its solvency. The argument was triumphantly convincing. Large numbers of the pamphlet were soon circulated to help the sale of Government bonds. It was translated into several languages and produced a strong impression in European countries. Another pamphlet from his pen was published in 1865, entitled "How Our National Debt Can be Paid," and this was followed in a

month by still another pamphlet styled "The Western States: their Pursuits and Policy." In 1870 he published a pamphlet under the title of "The American Farmers' Market at Home and Abroad," bearing immediately upon the practical needs of the hour. After his return to the Treasury Department in 1873 Dr. Elder, in the line of his official duties, published many other pamphlets under such titles as "The Panic and Pressure of 1873," "The Causes of the Crisis," "The Growth and Reduction of Debt," and similar subjects that he was well able to discuss. In those days pamphlet publications were largely relied on to educate the people and influence public opinion, recalling the pamphlet literature of the Revolution. David A. Wells published "Our Burden and Our Strength" in pamphlet form in 1864. Henry C. Carey wrote many pamphlets, as did also his father, Mathew Carey.

But Dr. Elder's literary activity was not confined to newspaper work or the preparation of pamphlets. The amount of literary work that came from his pen, all of good quality and of great variety, is really marvelous. His first ambitious literary venture to which we can assign an exact date was a contribution to *Putnam's Magazine* in 1854, entitled "General Ogle—a Character," which described in graphic and attractive style, and with striking analytical power, one of the strong men of the Alleghenies in the early part of the last century. This sketch at once attracted wide attention among literary men. In the same year Dr. Elder published a volume of miscellaneous essays and sketches entitled *Periscopics*, and in 1855 what was really a second edition of this book appeared, but with a new name: it was entitled *The Enchanted Beauty, and Other Tales, Essays, and Sketches*, forty-six in all, including "General Ogle." Just when the "tales, essays, and sketches" composing these volumes were written does not appear, or where any of them, except "General Ogle," were previously published, if at all. Many of the essays are profoundly philosophical; the sketches deal with every-day life and its manifold lessons; of the tales "Elizabeth Barton" ranks with the best work of American story writers.

In 1871 Dr. Elder published his great economic work, *Questions of the Day: Economic and Social*, which volume caused him to take rank at once with Alexander Hamilton, Henry C. Carey, and Stephen Colwell, the great American economic writers. Like them he claimed credit for the protective policy as one of the leading causes of national prosperity. The book covered almost the whole field of economic inquiry—wealth, wages, money, competition and co-operation, protection and free trade, etc. It was a valuable contribution to the economic literature of that day or of any day. Its chapters deal with the underlying principles of an advanced social system, and the facts he presented are as pertinent now as they were then. In 1882, three years before his death, Dr. Elder published another comprehensive work which he entitled *Conversations on the Principal Subjects of Political Economy*. As its name indicates, this volume was intended especially for the use of students—teacher, pupil, and disputant, as *dramatis personæ*, asking and answering questions. The range of topics discussed in this volume was wider than in its predecessor. The two books are properly complements of each other, and were probably intended to be. It is a pity that both are not more widely used as text-books in our colleges and universities instead of the writings of J. Stuart Mill and other English economists with free trade convictions. One of the great economic writers of the country Dr. Elder was *par excellence* the political economist of Western Pennsylvania.

Dr. Elder had an analytical and logical mind and he also possessed a fine talent for descriptive writing. Fancy and imagination were also present in a marked degree in his mental endowments. His conversational powers were remarkable. He had a genius for statistics, which is a rare trait in combination with the story-telling faculty and with oratorical gifts. Of his oratory the present generation knows almost nothing, because it is now about fifty years since his voice was heard pleading for the negro slave or advocating many policies in which his heart and brain were enlisted, the protective policy included. Probably the most notable of his eloquent appeals was

made in behalf of Hungarian liberty at the banquet that took place in Musical Fund Hall, in Philadelphia, in honor of the Hungarian patriot, Louis Kossuth, on December 26, 1851. His speech was not reported, except very briefly, as was the custom of that day, but the *Public Ledger* of the following day said that "Dr. Elder made a powerful and eloquent speech," to which Kossuth, "who was called for by a spontaneous cheer," happily replied. Recollections of this incident of the banquet still survive in the memories of a few old Philadelphians.

Dr. Elder married early in life Sarah Maclean, a daughter of Moses Maclean, a leading lawyer of Gettysburg. Her mother was a grand-daughter of Hugh Alexander, who represented Cumberland county in the Convention of 1776 which framed the first Constitution of Pennsylvania.

Jeremiah Sullivan Black, who will always be referred to as Judge Black, was born on a farm in Stony Creek township, Somerset county, on January 10, 1810, and died at York, Pennsylvania, on August 19, 1883. His grandfather, James Black, came from the North of Ireland and settled on a farm in Somerset county in colonial days. Judge Black's father, Henry Black, was a man of prominence, a member of the General Assembly, a Whig Representative in Congress, and for twenty years an associate judge of Somerset county. Judge Black's mother was Mary Sullivan, and her mother was Barbara Bowser, "a person of pure German blood," so that Judge Black, like many other Pennsylvanians, was of mixed Scotch-Irish and German lineage.

Judge Black was known as a hard student from early boyhood, when he first attended a country school. At the age of sixteen years his school education had been completed at an academy in Brownsville. For some time afterwards he pursued his classical and other studies on the farm. He had an astonishing memory. He mastered Latin as if it were his mother tongue. At seventeen he entered the office of Chauncey Forward, in Somerset, as a student of law. He was fortunate in his choice of a preceptor. Mr. Forward, like his brother, Walter Forward, of Pittsburgh, who was Secretary of the Treasury under

President Tyler, was a great lawyer. Judge Black once said of Chauncey Forward and Charles Ogle, who were cotemporaries at the Somerset bar: "I have never, in my relations with the men of great reputation in this country, met the superior, nor can I now name the peer, of either of these men as lawyers." Mr. Forward was the Democratic leader of Somerset county and Mr. Ogle the Whig leader. Both men represented their Congressional district in the House of Representatives, although of opposite politics. Judge Black early identified himself with the Democratic party, although his father was a Whig.

In 1831 Jeremiah S. Black was admitted to the bar and in a short time thereafter he was appointed deputy attorney general of the Commonwealth for Somerset county. Mr. Forward having been a member of Congress for several years he soon shared his legal business with his bright student, who at once entered upon a large practice. So thoroughly had the young lawyer mastered the science of the law and so rapidly did he rise in his profession that his services were soon in demand in the neighboring counties. He had made his mark. In 1842, when only thirty-two years old, he was appointed by Governor Porter president judge of the sixteenth judicial district of Pennsylvania. In 1851, when forty-one years old, his reputation as a wise judge had been so firmly established that he was nominated by the Democratic State Convention as a candidate for a seat on the Supreme Bench and was elected, four other judges being chosen at the same time, the legislation of 1850 having made membership in the Supreme Court an elective office. His son, Chauncey F. Black, says: "In the lottery which determined the matter for that first bench of judges chosen by the people at the polls Judge Black drew the short term and became chief justice. In 1854, his term as chief justice having expired, he was elected an associate justice by a very large majority, although the head of his ticket, the Democratic candidate for Governor, was defeated." From his position on the Supreme Bench he was called by President Buchanan in March, 1857, to be a member of his Cabinet as Attorney General. This position he filled with

great ability until the winter of 1860-61, when he succeeded Lewis Cass as Secretary of State and Edwin M. Stanton took his place as Attorney General.

It does not fall within the scope of this volume to consider the grave questions leading to or growing out of the civil war, and we therefore pass over Judge Black's connection with any of these questions. In March, 1861, with the beginning of Abraham Lincoln's Administration, he retired to private life. He was now fifty-one years old. He soon changed his residence from Somerset to York. For a short time he was the official reporter of the opinions of the Supreme Court of the United States, from which position he withdrew to engage in the active practice of his profession, much the larger part of which was before the Supreme Court. During the next twenty years he was employed in many important cases. He was one of the counsel of President Johnson in the impeachment proceedings of 1868, and one of the counsel of Samuel J. Tilden in the proceedings before the Electoral Commission in 1877. He was a delegate-at-large to the Convention of 1873 for revising the Constitution of Pennsylvania.

Judge Black was not only a great lawyer and one of the many great judges of Pennsylvania, worthy to rank with Wilson, Tilghman, and Gibson, but he was also one of the most accomplished literary men that the whole country has produced. His essays, letters, and speeches, which are embodied in a stout volume that was compiled by his son and published soon after his father's death, should be read by every lover of good English writing for their literary style alone, if for no other reason. His judicial opinions are said by lawyers to possess exceptional merit for their clearness of statement. Judge Black excelled in the ability to make a plain statement, whether orally or in writing. His style was first of all logical, as became a lawyer and a judge, but it was especially remarkable for the great learning which it exhibited without ostentation, for its wealth of pertinent illustrations, and for its graceful and elegant diction. To quote a sentence from his eulogy of Judge Gibson, "the whole round of English literature was familiar to him."

He never used the wrong word. His eulogy on the life and character of Andrew Jackson, delivered at Bedford on July 28, 1845, very early in his career, attracted wide attention, and from that day his reputation as a writer of the purest and most vigorous English was firmly established, at least in Pennsylvania. No finer tribute to his marvelous style could be conceived than is contained in the following analysis of its characteristics by that eminent lawyer, David Paul Brown, which may be found in *The Forum, or Forty Years at the Philadelphia Bar*:

“The style of Judge Black’s composition is unlike any other with which we are acquainted. It is fluent, sententious, argumentative, facetious, and sarcastic. It is, to our mind, a beautiful style, and the wonder is where he should have formed it. There certainly could have been no temptation within the ordinary jurisdiction of a county court to lead to so much perfection in composition; nor could his opportunities while at the bar account for his literary excellence; nor had he the advantages that Franklin and many others enjoyed in a printing office, which in itself, with a bright pupil, is the best of schools. Where, then, did he obtain it? He obtained it where Shakespeare, and Johnson, and Chatterton, and Burns obtained theirs—from the force of innate genius, by which opportunities of knowledge are not only improved but created.”

The following extract from Judge Black’s eulogy of Chief Justice Gibson’s literary style will give the reader a fair illustration of his own style: “His written language was a transcript of his mind. It gave the world the very form and pressure of his thoughts. It was accurate, because he knew the exact boundaries of the principles he discussed. His mental vision took in the whole outline and all the details of the case, and with a bold and steady hand he painted what he saw. His words were always precisely adapted to the subject. He said neither more nor less than just the thing he ought. He had one faculty of a great poet—that of expressing a thought in language which could never afterwards be paraphrased. When a legal principle passed through his hands he sent it forth clothed in a dress which fitted it

so exactly that nobody ever presumed to give it any other. Almost universally the syllabus of his opinion is a sentence from itself, and the most heedless student, in looking over *Wharton's Digest*, can select the cases in which Gibson delivered the judgment as readily as he would pick out gold coin from among coppers. For this reason it is that, though he was the least voluminous writer of the court, the citations from him at the bar are more numerous than from all the rest put together."

Judge Black's controversies were mainly with prominent men of his day on political questions—Stephen A. Douglas, Judge E. R. Hoar, Henry Wilson, General Garfield, and others. He attacked their statements concerning matters of fact and he condemned political acts and policies which he thought deserved rebuke, while he eagerly accepted the gage of battle when there was sufficient provocation. His defense of the character of Edwin M. Stanton against statements made by Henry Wilson contains this example of his sarcastic style: "Your attacks upon Buchanan, Toucey, and Thompson might be safely passed in silence, but the character of Stanton must utterly perish if it be not defended against your praise." His open letter to General Garfield contains probably the most scathing criticism of New England Puritanism that has ever been written. His controversy with Robert G. Ingersoll in *The North American Review* will be remembered.

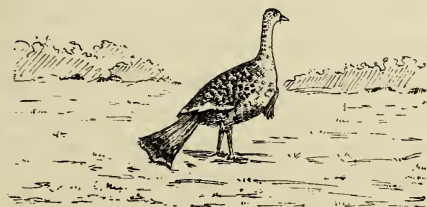
In 1836, when he was about twenty-six years old, Judge Black married Mary Forward, the oldest daughter of Chauncey Forward. One son, who is now dead, survived him, Chauncey F. Black, at one time Lieutenant Governor of Pennsylvania and afterwards the unsuccessful candidate of the Democratic party for Governor.

Somerset county has produced other prominent men than Dr. Elder and Judge Black. Two of these we have incidentally mentioned—Chauncey Forward and Charles Ogle. Other members of the Ogle family have been distinguished as lawyers or politicians, sometimes as both. Norman B. Ream, one of the country's leading capitalists and a director of the United States Steel Corporation, was

born in Somerset county in 1844. George F. Baer, who is now the president of the Philadelphia and Reading Railway Company, was born in Somerset county in 1842. Cyrus Elder, a lawyer, and a writer of poetry and fiction and also on economic subjects, was born in Somerset in 1833. Few counties in Pennsylvania have produced as many notable men as Somerset county, which is situated on the summit of the Allegheny mountains. In the early days it was far away from commercial, political, educational, and financial centres. Its principal town, Somerset, has even now a population of less than three thousand.

Judge Henry M. Brackenridge practiced law in Somerset for a short time between 1808 and 1810, but the young lawyer emigrated to the West within a year. The distinguished Judge Moses Hampton was at one time a member of the Somerset bar and was prothonotary of Somerset county when Joseph Ritner was Governor, a position which he resigned in 1838 to remove to Pittsburgh.

During the Administration of Martin Van Buren Joseph Williams, a native of Westmoreland county, who had practiced law in Somerset, was appointed a United States Judge for the Territory of Iowa, and at the same time William B. Conway, then editing *The Mountaineer*, at Ebensburg, in the adjoining county of Cambria, was appointed Secretary of the Territory—illustrating the point already made that the hill towns of Pennsylvania have produced many men of wide reputation. Williams was appointed in 1838, reappointed in 1842, and again in 1846. He died at Fort Scott, Kansas, in 1871. In 1830 he was appointed register of wills and recorder of deeds for Somerset county. Conway died at Davenport, Iowa, while in office, in December, 1839.



CHAPTER XXXIII.

A CHAMPION OF PROTECTION.

UNITED STATES SENATOR QUAY died at his home in Beaver, Pennsylvania, on Saturday, May 28, 1904, and was buried on Tuesday, May 31, in the Beaver Cemetery. In a nearby cemetery, in the neighboring town of Rochester, there rest the remains of another citizen of Beaver county, General Abner Lacock, who was a United States Senator from 1813 to 1819 and had previously been a member of the General Assembly of Pennsylvania and a Representative in Congress from 1811 to 1813. This chapter relates almost entirely to Senator Quay's inestimable services in behalf of the industries of our country.

Matthew Stanley Quay was born at Dillsburg, York county, Pennsylvania, on September 30, 1833. At the time of his death he was not 71 years old. A pathetic interest attaches to some remarks which he made a little more than three years before his death, in which he seems to have contemplated the early termination of his earthly career. On May 14, 1901, after his third election to the Senate, his political friends honored him with a banquet at Philadelphia, at which he delivered an address. He said: "At three score years and ten the world grows lonely. Through wildernesses almost desolate the stream of life glides darkly toward the eternal gulf. The associations of early existence are gone. Its objects are gained or lost or faded in importance, and there is a disconnection with ideas once clamped about the reason and dissolution of feelings once melting the heart. Occasions like the present stand in pleasant relief—green patches on the sandy delta—and are especially attractive and welcome. My political race is run. It is not to be understood that God's sword is drawn immediately against my life, nor that my seat in the Senate is to be prematurely vacated, but that, with the subscription of my official oath on the 18th of January, my connection with the serious labors and responsi-

bilities of active politics ceased. I have many friends to remember; I have no enemies to punish. In this regard I put aside the past." Senator Quay had "no enemies to punish," although his political power was then very great. Another United States Senator once exhibited the same spirit of Christian charity. Benton and Calhoun were bitter enemies, but when Calhoun died Benton refused to criticise anything that his great rival had done. He said: "When God puts his hand on a man I take mine off."

Senator Quay did not live to serve out the term for which he had been elected, dying at three score years and ten. In the spirit of the address from which we have just quoted almost the last request he made before his death was that the inscription, *Implora Pacem*, (pray for peace,) should be placed on his tombstone. This has been done.

To the above brief account of the deceased Senator's personal history we add his impressive record while a United States Senator, and also as chairman of the Republican National Committee, in advocating and defending the policy of protection for our home industries. We ask attention to this record. As it is a part of our industrial history the people of Pennsylvania should know it and remember it, although Senator Quay's tariff work was for the benefit of the people of all the States.

In December, 1887, a crisis in the industrial history of the country was precipitated by the annual message of President Cleveland, in which he advocated a revision of the tariff on lines favorable to the policy of free trade; in other words, he recommended at great length a reduction of duties. In the following month of January Mr. Mills introduced in the House a bill embodying Mr. Cleveland's recommendations, and in July of that year, 1888, this bill passed the House by a vote of 162 yeas to 149 nays, the Democrats having control of that body. The Senate, being Republican, declined to consider the Mills bill, and subsequently, on January 22, 1889, passed a substitute for it by a vote of 32 yeas to 30 nays—a close vote. The House never considered the substitute. In June, 1888, a few weeks before the passage of the Mills bill through the House, Mr. Cleveland was nominated at

St. Louis for re-election upon a platform specifically indorsing the Mills bill, and in the same month General Harrison was nominated for the Presidency by the Republicans at Chicago upon a platform in which the Mills bill was denounced by name. The issue between protection and free trade was thus fairly drawn.

Soon after the nomination of General Harrison for the Presidency in June, 1888, Senator Quay, who had entered the Senate in March, 1887, and whose reputation as a wise political manager had preceded him, was made chairman of the Republican National Committee. The task set for him was the election of General Harrison and a Republican House of Representatives. He accomplished both these objects. The country rang with his praises. Everybody conceded that without his wise leadership the battle for protection would have been lost, for New York, the pivotal State, was carried for Harrison by only 13,000 plurality. If Mr. Cleveland and a Democratic House had been elected the Mills bill would have been indorsed and tariff agitation on free trade lines would have continued. Mr. Cleveland had already practically destroyed the protectionist sentiment in his own party, and Samuel J. Randall, the leader of the small band of Protectionist Democrats in the House, was on his deathbed. But Harrison's election, made possible by Quay's generalship, put an end for four years to all free trade hopes. As a logical sequence of the Republican success in 1888 the House of Representatives, when it met in December, 1889, undertook the revision of the tariff of 1883 on the lines of the Senate substitute for the Mills bill. This revision became a law on October 1, 1890, and is known as the McKinley tariff. This tariff was mainly a reproduction of the Senate bill of January 22, 1889.

An important service was rendered by Senator Quay in connection with the enactment of the McKinley tariff bill. The bill was jeopardized in the Senate by the Federal Elections bill, the so-called "Force bill," which many Republican Senators were determined to pass and which Democratic Senators, who were in the minority, were determined to defeat by obstructive tactics, or, in other

words, by talking the bill to death. If this scheme of the Democrats had been carried out they would not only have succeeded in defeating the "Force bill" but they would also have prevented the passage of the McKinley tariff bill through the Senate, as the time consumed in killing the "Force bill" would have prevented the consideration of the McKinley bill. Senator Quay had the skill and address to rescue the McKinley bill from this serious dilemma by securing the adoption of an order of business which gave it the right of way over the "Force bill." Thenceforward the McKinley bill had plain sailing.

Senator Quay's part in securing the defeat of the original Wilson tariff bill in 1894 and the substitution of higher rates of duty for hundreds of its practically free trade provisions can not be overlooked by the impartial historian. It was of inestimable value to the country. Both branches of Congress were now Democratic. The Senator did not need to convince Senator Gorman, Senator Brice, and four or five other Democratic Senators of the destructive character of the Wilson bill, but it was vitally necessary that about thirty other Democratic Senators should be convinced that, if they did not vote to give at least partial protection to the industries which had been so seriously threatened by the Wilson bill, the bill could never become a law; with the assistance of other Republicans he would deal with it as the Democrats had proposed to deal with the "Force bill." This threat, which was carried out by the delivery of the Senator's obstructive speech, occupying twelve days in April, May, and June, 1894, had the effect that was desired. The tariff bill, which became a law on August 28, 1894, was not the original Wilson bill at all. Many of its worst features had been eliminated, and for this result Senator Quay received at the time the highest praise from his Senatorial colleagues.

In the *Bulletin* of the American Iron and Steel Association for August 1, 1897, we thus referred to Senator Quay's part in the passage of the Dingley tariff bill of that year, the third important tariff measure with which he was prominently identified while a member of the Sen-

ate: "It only remains for us to express the thanks of our iron and steel manufacturers to the Republican members of the House Ways and Means Committee and the Senate Committee on Finance for the patient consideration they have given to the tariff interests of our iron and steel industries. Nor do we forget the valuable aid which was freely and intelligently given by Senator Quay, of Pennsylvania, first, in counseling a wise policy of moderation by our iron and steel manufacturers, and, second, in carefully guarding every needed iron and steel provision while the bill was under consideration in the Senate. In this latest service Senator Quay has fitly crowned his great achievement when the Wilson tariff bill was shorn of many of its worst features through his efforts."

With this record before us of unflinching devotion to the best interests of his country it will be seen at a glance how great is the debt of gratitude that all our people owe to the memory of the distinguished Pennsylvania Senator whose remains now rest in Beaver Cemetery.

When Senator Quay died numerous eulogies upon his life and public services were pronounced in the Senate and House by leading men of both branches. The list of Senators who spoke in praise of their deceased colleague is a particularly notable one. The tributes of affection and appreciation from Senator John W. Daniel, of Virginia, and Senator John T. Morgan, of Alabama, both of whom were politically opposed to Senator Quay, are worthy of more than a passing thought.

Senator Daniel said: "He was a strong man, of many fine faculties and traits of character. He had the capacity for engaging and attaching to himself disinterested friends—a quality which bespeaks the fiber of the man more than words. He hated shams. Hypocrisy he despised. His opinions as a rule were boldly declared. His positions were resolutely maintained. His enemies he defied; his friends he cherished. He was without ostentation and of little vanity, but he had great pride and great courage. His ambition was to do things rather than to say things, but whatever he said he said well. Concentrative in his purposes and constructive in his

plans he paid great attention to the great questions that came to this body for consideration, and he engaged but little in minor controversies. He focused his energies on decisive points. He was a fighter when a fight was on, but he was not disputatious, intermeddlesome, or pugnacious. Whenever he spoke he showed comprehensive grasp of his subject in all of its relations. He was a thoroughly informed and well-read man, but without literary pretensions or affectations. He exerted large influence as a Senator, not only upon his party but as well upon his colleagues without regard to political affiliation. This influence was due to his genial disposition, to his manly character, to his common sense, and to the clearness and wide range of his vision."

Senator Morgan said: "In speaking of Matthew Stanley Quay if I was moved by the affection of long and intimate friendship I could not give him higher praise than to say that he performed the duty of an American Senator during a long service with faithful devotion and with such ability as has left on the records of the Senate most valuable proofs of efficient service to the country. It may be truthfully said that no important matter escaped his attention and his careful examination, and no public danger was presented that could escape his alert detection or drive him from his post of duty. I do not recall an instance in which he was not an important party to the settlement of contentions that concerned the welfare of the country, and I never knew him to attempt anything except the honorable reconciliation of those who were rash, angry, or obstinate in their contentions. I have in mind some notable instances when his courage and forbearance and his genius for reconciliation saved measures and men from disastrous consequences. In his character of Senator and friend he was true and blameless, and has won for himself a fame that will grow greater and better as time advances."

Senator Daniel followed his tribute to the personal qualities and public services of Senator Quay with a remarkable eulogy of Pennsylvania, Senator Quay's native State, of which he himself once said in a public address:

"I am proud that there is not a drop of blood in my veins that is not Pennsylvania blood two centuries old." Senator Daniel said of Quay and Pennsylvania:

"His genius was typical of that of his people. His public career reflects the characteristics of the great middle State of Pennsylvania. It is a State where agriculture, mining, manufacturing, commerce, learning, and science have advanced as nearly abreast of each other as in any place upon the earth's surface. The community is thrifty, prosperous, and progressive through the combination of diversified resources, abounding energies, and steadfast purpose. The evenness of its development in multitudinous departments of enterprise has imparted to the massive structure stamina and proportion. The people of Pennsylvania present a rare picture of industrial activity and of domestic peace and reposeful power. At the base of their history is the stirring and sturdy blood of the colonial pioneers, toned, as it were, with the peaceful mood of Penn and the practical wisdom of Franklin. Through all the gradations of their progress the American spirit has pervaded their atmosphere. Schools of fanaticism and hotbeds of anarchy find no congenial resort in such communities."



CHAPTER XXXIV.

OTHER NOTED WESTERN PENNSYLVANIANS.

THE limits of this volume preclude even brief summaries of the careers of other eminent Western Pennsylvanians than those already mentioned. The list of all these who are worthy of extended biographical notice is a very long one. It includes United States Senators James Ross, Abner Lacock, Walter Lowrie, William Wilkins, (also Secretary of War under President Tyler,) James G. Blaine, one of the greatest of all native-born Pennsylvanians, and Edgar Cowan; Judges Henry Baldwin, Walter Forward, (also Secretary of the Treasury under President Tyler,) Charles Shaler, Moses Hampton, Wilson McCandless, Walter H. Lowrie, Cyrus L. Pershing, Daniel Agnew, and many others; John Moore, the first president judge of Westmoreland county; Henry D. Foster, the eminent lawyer; Andrew Stewart, the earnest and unyielding champion of a protective tariff; John Covode, the able and popular Westmoreland Congressman; Governor John W. Geary; the astronomer, John A. Brash-ear; Ida M. Tarbell, Lucy Forney Bittinger, Margaretta Wade Deland, Jane Grey Swisshelm, T. J. Chapman, James Veech, Neville B. Craig, Isaac Craig, Wm. M. Darlington, Wm. G. Johnston, and other literary men and women, including Judges Hugh H. Brackenridge and his son, Henry M. Brackenridge; the philanthropists, Rev. William A. Passavant, D. D., and Felix R. Brunot; Stephen C. Foster, the composer, whose "Old Folks at Home" and other folk songs can never be forgotten; the mathematician, Joseph Stockton, whose *Western Calculator* the boys of seventy years ago will well remember; and many others, including eminent divines and educators, editors, artists, and great engineers. Edwin M. Stanton practiced law in Pittsburgh in 1847 and for about ten years afterwards. Three generations of Ewings have furnished the courts of Fayette county with president judges—father,

son, and grandson. The Lowrie family has produced at least eight men of distinction in the law, statesmanship, and theology. "There were giants in those days." Appreciative mention of all these leading Western Pennsylvanians—what they have done and wherein they have honored their State and the generations to which they have respectively belonged—we are compelled to leave to others who may some day think it worth while to compile a second volume descriptive of Progressive Pennsylvania.

The reader will notice in the above list of prominent Western Pennsylvanians that about one-half of the persons mentioned have not had middle names. It was a common custom of our forefathers to give their sons only one name, a custom which is now generally ignored.

Our first five Presidents were plain George Washington, John Adams, Thomas Jefferson, James Madison, and James Monroe. Of the succeeding Presidents thirteen have had no middle name. They were Andrew Jackson, Martin Van Buren, John Tyler, Zachary Taylor, Millard Fillmore, Franklin Pierce, James Buchanan, Abraham Lincoln, Andrew Johnson, Grover Cleveland, Benjamin Harrison, William McKinley, and Theodore Roosevelt. We have had twenty-five Presidents and eighteen of these have had no middle name. Other great men of the Republic have had no middle name—Patrick Henry, Benjamin Franklin, James Otis, Samuel Adams, John Hancock, Alexander Hamilton, Aaron Burr, Elbridge Gerry, Robert Morris, John Jay, John Marshall, Peyton Randolph, Timothy Pickering, George Clinton, Anthony Wayne, Horatio Gates, Nathanael Greene, Albert Gallatin, Horace Binney, William Wirt, Silas Wright, Henry Clay, Daniel Webster, Lewis Cass, John Bell, Edward Everett, Thomas Corwin, Thomas Ewing, George Bancroft, Caleb Cushing, Horace Greeley, Schuyler Colfax, Charles Sumner, Simon Cameron, John Sherman, Hannibal Hamlin, and many others.

Most of the early Governors of Pennsylvania had no middle name—Thomas Mifflin, Thomas McKean, Simon Snyder, William Findlay, Joseph Hiester, George Wolf, Joseph Ritner, William Bigler, and James Pollock.

Much has been said in praise of the enterprise,

courage, intelligence, and aggressive leadership of the Scotch-Irish element in the population of Western Pennsylvania. The Scotch-Irish are a masterful race, wherever found. But, while largely dominating and giving tone and character to the early settlement and subsequent history of Western Pennsylvania, they are not entitled to all the credit they have received. The people of that part of Pennsylvania have been from the first a really composite people. Virginia and Maryland furnished to that section nearly all its first settlers; the French established no permanent settlements. Next came the Scotch-Irish in considerable numbers, with an occasional family direct from Scotland, and a few English, Celtic Irish, Welsh, and Huguenots, and then came many Pennsylvania Germans and other Germans. Afterwards came men from New York and New England, especially to the northwestern section. All these strains of blood were represented in the settlement of Western Pennsylvania in its first hundred years, and to these have since been added very many latter-day Germans and representatives of other nationalities. So that, while it is true that the Scotch-Irish element has been and still is the dominating element in that section of Pennsylvania, it has been greatly strengthened by the admixture of the other elements that have been mentioned. A curious illustration of the correctness of this statement is found in the fact that three of the noted judges and public men of Pittsburgh in the early part of the last century, namely, Henry Baldwin, Walter Forward, and Charles Shaler, were all natives of Connecticut.



GENERAL INDEX.

Not including the names of individuals or firms or names mentioned in the Chronological Chapter, but including the names of companies.

A.	Page
Agriculture in Pennsylvania.....	182, 183
Allegheny Bessemer Steel Company... ..	213
Allegheny bridge at Pittsburgh..	252, 253
Allegheny City laid out in 1787.....	263
Allegheny County organized in 1788..	262
Allegheny County, population of..	265, 266
Allegheny Portage Railroad	140-146
Allegheny river, early navigation of	122, 123
Aluminum, manufacture of, in Pa..	245-247
Amity, the first Pennsylvania ship... ..	21
Appalachian System.....	81-83
Apprenticeship system, colonial.....	52, 53
Armor plate, manufacture of, in Pa..	241

B.	Page
Baldwin Locomotive Works.....	182
Baltimore and Ohio Railroad..	124, 161-164
Bedford Company.....	188
Bessemer process for making steel	209, 210
Bessemer Steel Company, Limited....	215
Bessemer steel, first basic, in Pa.....	233
Bessemer steel, manufacture of... ..	232, 233
Bethlehem Iron Company.....	231, 241
Bethlehem, Moravian settlement at... ..	32
Boatbuilding at Pittsburgh.....	123
Boundaries of Pennsylvania....	15, 16, 75
Braddock's defeat.....	257
Braddock's Road.....	106
Brady's Bend Iron Company.....	205
Bridge, chain, first, in England.....	249
Bridge, chain, first, in U. S..	248-250, 254
Bridges, early, in Pennsylvania...	102, 103
Bridges, wire suspension, in U. S.	250-254
Bridle paths in Pennsylvania..	102, 103, 107
Brownsville, early shipping port...	119-121
Buffaloes in Pennsylvania.....	96-101
Bushy Run, battle of.....	1, 260, 307

C.	Page
Cambria Iron Co..	146, 195, 206, 208, 232
Cambria Iron Works, when built....	195
Cambria Steel Co.....	195, 207, 214, 226
Camden and Amboy Railroad... ..	163, 164
Canal boats built of iron in 1836....	128
Canal, first, in the United States..	131, 134
Canal transportation in the U. S..	130-138
Canal tunnel, first, in the U. S.....	147
Canals in Pennsylvania.....	130-138
Carbondale and Honesdale Railroad..	166
Carnegie Steel Company	214, 241
Carondelet Canal, building of.....	135
Charcoal iron industry of Pa.....	201
Charleston and Hamburg Railroad...	163
Chemicals, manufacture of, in Pa..	180, 181

	Page
Cleveland Iron Mining Company..	221, 223
Coal, anthracite	224, 225, 227, 228
Coal, bituminous, in Pa...	120, 121, 224-228
Coal, raw bituminous, use of.....	230, 231
Coal trade of Pittsburgh, beginning of	263
Coke industry, beginning of, in Pa...	229
Coke, production of, in Pennsylvania..	227
Columbia Railroad, building of...	140, 143
Conestoga Lock and Dam Nav. Co....	135
Conestoga wagons described.....	105
Conewago Canal, building of.....	135
Connellsville coke, manufacture of...	227
Connellsville, early shipping port....	117
Copper, first mill at Pittsburgh..	243, 244
Copper, Lake Superior, development of	243
Cornwall iron ore hills.....	216-219
Cotton goods, manufacture of, in Pa..	177
Crefeld settlers of Germantown....	27-30
Crucible steel, manufacture of, in Pa.	231
Cuban iron ores.....	223
Cuban Steel Ore Company.....	223
Cumberland Road, building of	109, 110, 313

D.	Page
Delaware and Hudson Canal..	163, 166, 252
Delaware and Schuylkill Nav. Co....	136
Delaware Division Canal Company...	148
Delaware Indians.....	13, 14, 70-74
Delaware river and bay, when named	12
Despatch Transportation Company...	150
Drovers in Pennsylvania.....	112, 113
Dunkards in Pennsylvania.....	31, 32, 42
Duquesne Steel Works, when built...	213
Durham boats in Pennsylvania.....	114
Dutch East India Company.....	12
Dutch settlers in Pa... ..	11-14, 37, 38, 40, 41

E.	Page
Edgar Thomson Steel Co., Lim..	210, 214
Edgar Thomson Steel Works built in	1873-1875.....
Edgar Thomson Steel Works, remarkable rail record of	214
English settlers in Pa.....	18, 37, 351
Erie Canal, building of... ..	137, 138, 142, 143

F.	Page
Ferries in Pennsylvania.....	102
Finn's in Pennsylvania.....	11, 12, 37
First emigrants from the Continent...	27
Flatboats in Pennsylvania.....	115-123
Forbes's Road, building of.....	106, 107
Fort Amstel, Dutch capital in Delaware	14
Fort Christina, Swedish settlement....	13

	Page
Fort Du Quesne.....	256-259, 261, 262
Fort Elfsborg, Swedish settlement....	13
Fort Fayette, when built.....	260, 261
Fort Nassau in New Jersey.....	12
Fort Necessity, surrender of.....	5, 257
Fort Pitt abandoned by the British..	260
Fort Pitt, when named.....	258, 259
Frankstown Road, building of....	107-109
Free Society of Traders....	17, 21, 79, 85
Freight rates, early, in Pa.....	110, 111
French and English, struggle between	257

G.

General Assembly of Pa.....	19, 309, 342
George's Creek Company.....	229
German Reformed in Pa.....	30, 31, 39
German settlers in Pa.....	6, 9, 40, 351
Germans, Penn's love for.....	29
Germantown, first settlers of.....	27-32
Glass, manufacture of, in Pennsylvania	180
Great Meadows, battle of.....	257
Great Western Iron Company.....	205

H.

Hannastown, burning of, in 1782....	74
Hannastown, resolutions of 1775..	301-303
Harrisburg, Portsmouth, Mount Joy, and Lancaster Railroad Company..	167
Hessian prisoners, sale of, in Pa...	49-51
Hessian soldiers in the Revolution...	50
Homestead Steel Works, when built..	213
Huguenots, French, in Pennsylvania	31, 35
.....	37, 38, 40, 41, 351

I.

Imprisonment for debt in Pa.....	51
Indians in Pennsylvania....	12-14, 70-74
Iron ore, first use of Cuban.....	231
Iron ore, first use of Lake Superior..	231
Iron ore in Pa.....	174, 175, 216-219
Iron works, early, in Pa.....	185-201
Italians in Pennsylvania.....	7, 228

J. and K.

Jackson Mining Company.....	220
James River Company.....	134, 135
Juragua Iron Company.....	223, 231
Keel boats in Pennsylvania.....	114-123
Kelly Pneumatic Process Co.....	209, 232

L.

Lake Champlain iron ores.....	223
Lake Superior iron ores....	219-221, 223
Leather, manufacture of, in Pa...	178-180
Lehigh Coal and Nav. Co. 141, 147, 148, 166	
Lehigh Coal Company.....	147
Lehigh Crane Iron Company.....	230
Lehigh Navigation Company.....	147
Lehigh Valley Railroad Company....	172
Lehigh Zinc Company.....	241, 242
Little Schuylkill Navigation, Railroad, and Coal Company.....	168
Liverpool and Manchester Railway Co.	157
Locomotives, first, in the U. S....	162-164
Locomotives, manufacture of, in Pa...	182
Lumber, production of, in Pa....	177, 178
Lutherans in Pennsylvania.....	31, 39

M.

Mauch Chunk Railroad.....	166
Mennonites in Pennsylvania..	26, 27, 29-32
.....	40, 42, 68, 69
Middlesex Canal Company.....	135
Midvale Steel Company.....	241
Missouri iron ores.....	222
Mohawk and Hudson Railroad Co....	163
Monongahela Navigation Company...	121
Moravians in Pennsylvania.....	32, 38-41
Mount Carbon Railroad Company....	168

N.

National Road, building of..	109-112, 313
Natural gas, general use of.....	236
Natural gas, production of, in Pa. 181, 182	
Negro slavery, act abolishing.....	58-61
Negro slavery in Pennsylvania....	54-69
Negro slavery, protest against 56, 57, 66-69	
Negro slaves at Pa. iron works....	61, 62
Negro slaves in Pa. down to 1840..	62-65
Negro slaves owned by Penn.....	55, 56
Negro slaves, statistics of.....	64, 65
Negroes in cities of the U. S....	7, 65, 66
Negroes in Pennsylvania in 1900..	65, 66
New England, civic pride in.....	2
New Jersey Steel and Iron Company	232
New Orleans, early trade with...	118, 119
New Wales, name proposed for Pa.	22-24
Nickel, manufacture of, in Pa....	242, 243

O.

Ohio, civic pride in.....	3
Ohio Company.....	255, 256
Ohio Steamship Navigation Company	125
Open-hearth steel in United States	232, 233
Otis Iron and Steel Company.....	233

P.

Pack-saddle described.....	104
Palatinate described.....	33
Paper, when first made in Pa.....	28
Penn's charter in 1681... 11, 12, 14-17, 26	
Pennsylvania and Ohio Transp. Co...	150
Pennsylvania Canal, building of..	139-148
Pennsylvania Canal Company.....	148
Pennsylvania Canal, freight rates on..	152
Pennsylvania Canal in operation..	149-155
Pennsylvania Canal packet boats..	154, 155
Pennsylvania Canal, portable iron boats described.....	128, 129
Pennsylvania Canal, sale of.....	145
Pennsylvania Canal, section boats and carboats described.....	153, 154
Pennsylvania Canal, transportation companies on.....	150, 151
Pennsylvania, climate of.....	77-81
Pennsylvania Coal Company.....	252
Pennsylvania, counties of.....	84-87
Pennsylvania divided into three parts	75
Pennsylvania Dutch, origin of name	41, 42
Pennsylvania, early navigation in..	114-123
Pennsylvania, few Indian relics in...	5, 6
Pennsylvania first to develop petrole- um industry.....	234
Pennsylvania, lack of civic pride in..	1-10
Pennsylvania largest consumer of nat- ural gas.....	237

	Page
Pennsylvania, history of naming of.	22-24
Pennsylvania, length and breadth of.	84
Pennsylvania, mixed population of.	37
Pennsylvania, native animals of.	88-95
Pennsylvania, native products of.	88
Pennsylvania, natural resources of.	76
Pennsylvania overgrown with woods.	81
Pennsylvania, Penn's description of.	77-79
Pennsylvania, population of province.	35
Pennsylvania, population of State.	36, 84
Pennsylvania Railroad.	111, 144-146
.....	148, 149, 155, 169-172
Pennsylvania, rivers and lakes of.	83, 84
Pennsylvania, scenery of.	76, 77
Pennsylvania Steel Company	217, 231-233
Petroleum discovered in Ohio.	235
Petroleum, earliest mention of.	234
Petroleum in Kentucky.	235
Petroleum in New York.	234, 235
Petroleum, production of.	181
Philadelphia and Allegheny counties,	
growth of, in population.	265, 266
Philadelphia and Reading R.R.	137, 167-170
Philadelphia and Reading Ry. Co.	167, 341
Philadelphia and Trenton Railroad Co.	167
Philadelphia, Ger., and Nor. Railroad.	166
Philadelphia named by Penn.	19
Philadelphia, settlement of.	19, 20
Philadelphia slave market.	58
Philosophical Society, report of.	132
Physical conformation of Pa.	8, 9
Pitt, Wm., no monument at Pittsburgh	5
Pittsburgh and Boston Mining Co.	243, 244
Pittsburgh and Connellsville R. R.	162
Pittsburgh Bessemer Steel Company.	213
Pittsburgh, first blast furnace in 1792.	198
Pittsburgh, first glass works at.	263
Pittsburgh, first iron foundry in 1805.	198
Pittsburgh, first rolling mill in 1811-12.	199
Pittsburgh, first steamboat in 1811.	124, 264
Pittsburgh Gazette, first newspaper	
west of Allegheny mountains.	263
Pittsburgh had negro slaves.	58
Pittsburgh incorporated as a borough	262
Pittsburgh, Manor of.	261, 262
Pittsburgh, second furnace in 1859.	200
Pittsburgh, when named.	258
Portland cement, production of, in Pa.	182
Presbyterians in Pennsylvania.	34
Protective tariff	202, 203, 333, 343-346, 349

R.

Railroad, first passenger, in the U. S.	158
Railroad, first passenger, in the world.	156
Railroad, mileage of, in Pennsylvania.	165
Railroads, early criticism of, in Eng-	
land.	156, 157
Railroads, early criticism of, in the	
United States.	158-161
Railroads, early, in Pennsylvania.	165-173
Railroads, opposition to building	172, 173
Rails, manufacture of, in Pa.	202-215
Redemptioners in Pennsylvania.	43-53
Redemptioners, Washington bought	43, 47
Rees (James) & Sons Company.	129
Reliance Transportation Company	128, 150

S.

	Page
Salt, discovery of, in Western Pa.	238
Salt industry of Pa.	116, 238, 239
Schuylkill and Susquehanna Nav. Co.	136
Schuylkill Nav. Company.	137, 147, 148
Schwenkfelders in Pennsylvania.	32
Scotch-Irish in Pa.	6, 9, 10, 33-37, 39, 351
Second settlement in Pa.	24, 25, 133
Servants, bonded white, in Pa.	43-53
Sharon Iron Company.	231
Shawnese Indians.	74
Ships, ocean, built at Pittsburgh.	120, 123
Sigua Iron Company.	223
Silk industry of Pennsylvania.	175, 176
Southern iron ores.	222, 223
Southern States, civic pride in.	3
Spanish-American Iron Company.	223
Spelter, manufacture of, in Pa.	241, 242
Stage coaches in Pennsylvania.	111, 112
Stage houses in Pennsylvania.	113
State Road in Pennsylvania.	106, 107
Steamboat building, decline of.	126
Steamboats, early use of, in Pa.	124, 125
Steamboats, first built in W. Pa.	124-126
Steamboat, first iron, in U. S.	126-129
Sunbury and Erie Railroad Company	148
Superior Iron Company.	208
Susquehannock Indians.	14
Swanandael, Dutch settlement at.	13
Swedish Lutherans.	20, 21
Swedish settlers in Pennsylvania.	11-15
.....	19, 20, 21, 37, 40
Swiss settlers in Pennsylvania.	37, 38, 40

T.

Tinicum, Swedish settlement at.	13
Tinplates and terne plates.	240, 241
Troy Steel Company.	233
Tunnel, first railroad, in the U. S.	144
Tunnels, first canal, in the U. S.	147
Turnpikes, early, in Pennsylvania	104-107

U.

Union Canal Company.	136-138, 147
Union Transportation Company.	150
Upland, Swedish capital.	14, 18, 19
United States Iron and Tinplate Co.	240
United States Steel Corporation.	212, 340

W.

Walking purchase, the.	70-73
Welsh settlers in Pa.	6, 18, 20, 38, 40, 351
Western Indians, conspiracy of.	259, 260
Western Pa. in the Ohio valley.	84
Western Transportation Company.	150
West Newton an early shipping port.	117
Whisky insurrection of 1794.	117
Wicaco, Swedish settlement at.	19
Wire rope, first works, in Pa.	252
Woolen goods, production of, in Pa.	176

Y.

Youghiogheny Slackwater Company.	122
----------------------------------	-----

Z.

Zinc, Pennsylvania a small producer.	184
--------------------------------------	-----

PERSONAL INDEX.

Not including names mentioned in the Chronological Chapter on pages 267-288 or names of companies in the General Index, but including firm names.

A.	Page		Page
Acheson, David	313	Bittinger, Lucy Forney.....	349
Acrelius, Israel.....	61, 62, 187, 217	Black, Chauncey F.....	337, 340
Adams, David.....	199	Black, George.....	151
Adams Family	289	Black, Henry and James.....	336
Adams, John Quincy.....	314	Black, Judge Jeremiah S.....	331, 336-340
Adlum, John.....	132	Blackfan, Rebecca.....	55
Agnew, Judge Daniel.....	349	Blaine, James G.....	349
Agnew, David.....	231	Boggs, Andrew.....	63, 64
Agnew, John Park.....	231	Boker, George H.....	4
Albert, George Dallas 298, 300, 304, 305, 308		Bolles, Albert S. (historian).....	47, 51
Alderson, Barnard	317, 319	Boone, Daniel.....	36
Alexander, Hugh.....	336	Boscawen, Admiral.....	298
Allen, Professor J. A.....	99-101	Boucher, John N. 63, 299, 304, 306, 308, 309	
Allen, William.....	216	Bouquet, Colonel Henry.....	106, 107, 121
Alrich, Peter.....	54		258-260, 307
American Ethnological Society.....	315	Bourne, Annie Nettleton	47
American Philosophical Society 131-133, 293		Bowman, Jacob.....	193
Amherst, General.....	298	Brackenridge, Judge Henry M....	341, 349
Anderson, Colonel Robert.....	15	Brackenridge, Judge Hugh H.....	349
Anshutz, George.....	63, 64, 194, 198-200	Braddock, General Edward.....	5, 257
Ansley, Mr.....	243	Bradford, Andrew.....	24
Argall, Captain Samuel.....	12, 132	Bradford, William.....	58
Ashe, Thomas.....	98, 260	Brashear, John A.....	349
Ashman, George.....	188	Breading, Nathaniel.....	192
Atkinson, G. W. P.	206	Brice, Calvin S.....	345
Avery, Rev. Charles.....	244	Brock, Colonel R. A.....	47
		Brodhead, Colonel Daniel.....	97
B.		Brodhead, Richard.....	310
Baer, George F	341	Brown, David Paul.....	339
Baird, Professor Spencer F.....	96, 101	Brunot, Felix R.....	349
Baker, Melchor.....	315	Bryan, Judge George	59
Baldwin, Judge Henry.....	197, 349, 351	Bryce, James.....	318
Baldwin, Matthew W.....	143	Buchanan, James.....	337, 340, 350
Baldwin, Robinson, McNickle & Beltz-		Buell, Augustus C. (historian).....	21, 80
hoover.....	199	Burd, Colonel James.....	120
Bancroft, George.....	259, 350	Burrell, Thomas.....	195
Barnard, General J. G.....	251	Burt, William A.....	220
Barnett, John.....	109	Butler, John B.....	254
Bassé, Detmar.....	196	Butler, Colonel William.....	309
Bausman, Rev. Joseph H.....	97		
Beatty, Rev. Charles.....	121	C.	
Beaver, General James A.....	40	Calhoun, John C.....	343
Beck, Dr.....	100, 101	Cameron, Simon.....	330, 350
Becker, Rev. Peter.....	32	Campbell, Colonel John.....	261
Beelen, Anthony.....	124, 199	Campbell, William.....	249
Belknap, Bean & Butler.....	199	Carey, Henry C.....	4, 333-335
Beltzhooover, Daniel.....	196	Carey, Mathew.....	4, 334
Bender, Charles.....	249	Carnegie, Andrew 201, 210-213, 215, 316-330	
Benner, General Philip.....	190	Carnegie, Brothers & Co.....	211, 213
Benton, Thomas H.....	343	Carnegie, McCandless & Co.....	210
Bessemer, Sir Henry.....	208, 209, 215	Carnegie, Phipps & Co., Limited..	233, 241
Biddle, Owen.....	188	Carnegie, Thomas M.....	211
Bigler, Governor William	39, 350	Carondelet, Governor.....	135
Bingham, Thomas and William... 150, 151		Carothers, Captain.....	146
Bishop, J. Leander (historian) ..28, 186, 187		Carr, Sir Robert.....	54

	Page		Page
Carroll, Charles (of Carrollton)	161	Dinwiddie, Governor	255, 257
Cass, General Lewis	338, 350	Dock, Jacob	150
Chandler, Professor Charles F.	235	Drake, Edwin L.	235, 236
Chapman, T. J. (historian)	58, 123-126	Drinker, Henry S.	147
.....	258, 261, 264, 349	Docherty, Bernard	300
Charles the Second	11, 15, 22	Dougherty, John	150, 151
Charlevoix, (explorer)	234	Douglas, Stephen A.	340
Chase, Salmon P.	333	Dunmore, Lord	301
Chauncey, Elihu	167	Du Quesne, Marquis	256
Chevalier, Michel	145		
Clark & Thaw	151	E.	
Clark, Thomas	151	Ecuyer, Captain Simeon	260
Claypoole, James	54	Edgar, William C.	204, 205
Cleveland, Grover	121, 343, 344, 350	Edinger, Judge James	91
Clinton, DeWitt	125	Edmondson, Captain	262
Coffin, Admiral Sir Isaac	157	Ege, George	50
Colder, Lieutenant-Governor	131	Elder Cyrus	341
Coleman, George Dawson	217, 218	Elder, Dr. William	331-336, 340
Coleman, Robert	49, 216-218	Elder, Dr. William Gore	331
Collins, (historian)	118	Egle, Dr. William H. (historian) ..	112, 238
Colwell, Stephen	4, 335	Elgar, Captain John	126, 127
Connell, Zachariah	117	Ellet, Jr., Charles	250
Connolly, John	301	Eshleman, H. Frank	134
Conway, William B.	341	Ewings, of Fayette county	349
Cooper, Hewitt & Co.	232		
Cooper, Peter	162	F.	
Cope, Frederick J.	159	Ferree, Madame	31
Covode, John	349	Field Family	289
Cowan, Christopher	199	Finley, Judge James	248, 249, 254
Cowan, Edgar	349	Firmstone, William	229
Craig & Bellas	155	Fisher, Sydney George (historian) ..	70
Craig & O'Hara	263	Fitch, John	124
Craig, Bellas & Co.	150	Forbes, General John 107, 120, 257-259,	307
Craig, Isaac (antiquarian)	349	Force, Peter	301
Craig, Major Isaac	191, 260	Forney, John W.	333
Craig, Neville B.	97, 191, 261, 349	Forward, Chauncey	336, 337, 340
Cram, William Everitt	89	Forward, Judge Walter	336, 349, 351
Cramer's Magazine Almanac	200	Foster, Henry D.	349
Crawford, A. L.	220	Foster, Stephen C.	349
Crawford, Captain	120	Fox, George	26
Crawford, William H.	314	Franklin, Benjamin	4, 134, 291
Cromwell, Thomas	188-190	.....	320, 339, 348, 350
Cronemeyer, W. C.	240	Franklin Institute	207
Curtin, Governor Andrew G.	64	Frazer, John	300
Curtin, Roland	64	Fritz, George	207
		Fritz, John	207, 208, 241
		Fulton, Robert	87, 124, 125, 292
D.			
Daniel, John W.	346-348	G.	
Darlington, Wm. M.	349	Gage, General Thomas	260
Davis, Arthur V.	246, 247	Galbraith, Robert	107, 108
Davis (James M.) & Co.	150-152	Gallatin, Albert	97, 312-315, 350
Davis, Phineas	164	Gannett, Henry (geographer)	84, 165
Day, Sherman (historian)	22, 103, 186	Garfield, General James A.	340
Defebaugh, James E. (historian) ..	177	Geary, General John W.	349
Deland, Margaretta Wade	349	George the Third	50, 302
Delaroche, Joseph	234	Gerehart & Reynolds	195
De la Warr, Lord	12	Gibson, Colonel John	58
Denny, E.	190	Gibson, John	191, 192
Denny, Governor William	259	Gibson, Judge John Bannister ..	4, 338-340
Depue, Daniel	189	Gilchrist, Percy C.	215
DeVries, David Pietersen	13	Goetz, George W.	233
Dewey, Admiral George	319	Gordon, Thomas F. ...	73, 136, 147, 196, 197
Dickens, Charles	51, 154	Gorman, A. P.	345
Dickinson, Jonathan	185, 186	Gormly, John	198
Diffenderffer, Frank Ried.	35, 43, 44, 48	Gowen, Franklin B.	168
.....	50, 51, 57, 218	Graeff, Abraham Op den	66-68
Dillon, Moses	191	Graeff, Dirck Op den	66-68

	Page		Page
Graff, Bennett & Co.....	200	Johnson, Andrew.....	328, 338, 350
Graff, Henry.....	151	Johnson, William.....	238
Grant, General U. S.....	3, 307, 328	Johnston (Alexander) & Co.....	194
Greene, General Nathanael.....	305, 350	Johnston, Governor William F.....	194
Gregory & Co.....	231	Johnston, William G.....	349
Grubb Family.....	216-218	Joncaire, Captain de.....	234
H.		Jones, Captain William R.....	212
Hall, Charles M.....	245-247	K.	
Hamilton, Alexander.....	306, 335, 350	Kalm, Peter.....	99
Hamilton, James (Mayor of Phila.)....	52	Keith, Sir William.....	187
Hamlin, Professor.....	100	Kelley, George W.....	90
Hampton, Judge Moses.....	341, 349	Kelley, William D.....	4
Hancock, John.....	305, 350	Kelly, Colonel John.....	100
Hanks, Nancy.....	36	Kelly, Rachel.....	3
Hanna, Charles A. (historian).....	35	Kelly, William.....	209, 215, 232
Harbaugh, Mathias & Owens.....	209	Kickenapawling, (Indian chief).....	107
Harbaugh, Springer.....	209	Kier, Samuel M.....	129, 235
Harley, Lewis R.....	45	Kimball, Gertrude Selwyn.....	259
Harmar, General Josiah.....	306	King, George S.....	195, 206
Harris's Directory of Pittsburgh.....	120	Knox, General Henry.....	191
Harrison, Benjamin.....	344, 350	Knox, John.....	326
Hartnraft, General John F.....	32, 39	Kossuth, Louis.....	336
Hayden, John.....	191, 192	Kunze, Rev. John Christopher.....	47, 296
Hayes, William B.....	199	Kyashuta, (Indian chief).....	97
Hays, John.....	243, 245	L.	
Hazard, Samuel (historian).....	22, 23	Lacock, General Abner.....	342, 349
Hendricks, Gerhard.....	66-68	La Fayette, Marquis de.....	305, 314
Hendricksen, Captain Cornelius.....	12	Laughlin & Co.....	200
Hiester, Governor Joseph.....	39, 294, 350	Lea, Henry Charles.....	4
Hildenbrand, Mr.....	252	Lee, Arthur.....	262
Hildreth, Dr. S. P.....	235	Lee, General Robert E.....	3, 308
Historical Society of Pennsylvania....	144	Leech & Co.....	150, 151
Hoar, Judge E. R.....	340	Leiper, Thomas.....	158
Holliday, John.....	195	Lenni Lenape.....	13
Hoopes, Townsend & Co.....	196	Leonard, Reuben.....	200
Hornaday, William T.....	98, 99	Lesley, J. Peter.....	82, 83
Houck, Hon. Henry.....	85	Lewis, General Andrew.....	237
Howe, Thomas M.....	243, 244	Lewis, George.....	200
Howe, General William.....	304	Lincoln, Abraham.....	3, 36, 320
Hudson, Henry.....	12	.....	321, 327, 338, 350
Hulbert, Archer Butler.....	99, 106	Lincoln, Dr. Charles H.....	301
.....	107, 115, 116, 124	Lincoln, John.....	36
Hull, George H.....	222	Livingston, Philip.....	2
Hunt, Captain Alfred E.....	246, 247	Livingston, Robert R.....	124, 125
Hunter, Joseph W.....	110	Lobingier (Christopher) & Brother....	194
Huntingdon, Countess of.....	87	Logan, James.....	56, 72, 187
Iius, John.....	32	Loomis, Professor.....	100
Hussey, Dr. Curtis G.....	231, 243, 244	Lowrie Family.....	349, 350
Hussey (C. G.) & Co.....	244	Lukens, John (Surveyor General)....	132
Hussey, Wells & Co.....	200, 231	Luther, Martin.....	325
I.		Lyon, William M.....	232
Ingersoll, Robert G.....	340	Lytle, Milton S. (historian).....	188
Irving, Washington.....	306	M.	
J.		McCandless, Judge Wilson.....	394
Jackson, Andrew.....	192, 199, 339, 350	McClellan, General George B.....	305
Jackson & Updegraff.....	192	McClurg, Joseph.....	198, 199
James, Mrs. T. P. (historian).....	185, 187	McCook, Colonel John J.....	327
Jamison, Major S. S.....	238	McDermett, William.....	191
Janney, Samuel M.....	14, 22, 85, 93	McElwee, Thomas B.....	62
Jansen, Reynier.....	24	McFaden (John) & Co.....	150
Jasper, John and Margaret.....	26	McKinley, William.....	321, 350
Jeans, James Stephen.....	156	McKnight, Dr. W. J.....	89
Jefferson, Thomas.....	236, 237, 291	McLanahan, J. King.....	128
.....	306, 312, 313, 320, 350	McMaster, John Bach (historian)....	57
Jenkins, Howard M. (historian).....	54	Mack, Alexander.....	31

	Page
Macleay, Moses.....	299, 336
Madison, James.....	306, 313, 350
Makemie, Rev. Francis.....	34
Mann, Job.....	332
Markham, William.....	17, 18, 81
Marshall, Edward.....	71
Matlack, Timothy.....	132
Meason, Dillon & Co.....	191
Meason, Isaac.....	191, 193, 248
Mellon, R. B.....	246
Mercer, Colonel Hugh.....	258
Merritt, General Wesley.....	319
Mey, Captain Cornelius Jacobson.....	12
Mifflin, Governor Thomas.....	292, 293, 306, 350
Miles, Colonel Samuel.....	189
Mill, J. Stuart.....	335
Mills, Roger Q.....	343
Minuet, Peter.....	13
Mitchell, John.....	239
Monroe, James.....	314, 350
Montour, Catherine.....	87
Moore, Judge John.....	63, 349
Morgan, John T.....	346, 347
Morrell, Daniel J.....	207, 215, 232
Morris, Anthony.....	68
Morris, Robert.....	136, 350
Morrison, J. H. (historian).....	125, 127-129
Morton, John.....	15
Mosley, A. K.....	250
Muhlenberg Family.....	3, 98, 289-297, 305
Mulholland & McAnulty.....	190
Musket, Robert Forester.....	209, 210, 215

N.

Neall, Frank L.....	149, 151
Needy, Hugh.....	189
Nemacolin, (Indian chief).....	106
New York Historical Society.....	315
Nicholson, John.....	192
Noble, Henry and John.....	196
Nutt, Samuel.....	186, 187

O.

O'Connor (James) & Co.....	150-153
Ogden, William B.....	206
Ogle, General Alexander.....	334
Ogle, Charles.....	337, 340
Ogle Family.....	340
O'Hara, General James.....	239, 309
Oliphant, F. H.....	193, 229
Oliphant, John and Andrew.....	192
Ormonde, Duke of.....	18, 76, 77, 79

P.

Park, Brother & Co.....	200, 231
Park, Jr., James.....	232
Parker, Edward W.....	224, 225
Passavant, Philip.....	196
Passavant, Rev. William A.....	196, 349
Pastorius, Francis Daniel.....	27-30, 66-69
Patton, Colonel John.....	189
Pears, Jeremiah.....	192, 193
Peckham, Professor Stephen F.....	234
Penn, Hannah.....	55, 56, 70
Penn, Governor John.....	35, 73, 299, 303
Penn, John, Thomas, and Richard (sons of William).....	70-72, 216, 217, 261
Penn, Letitia (Aubrey).....	55, 56

Penn, Richard (Lieutenant-Governor).....	300
Penn, William.....	1, 9, 11, 12, 14-27, 29 30, 37, 44, 53-56, 70-73, 76, 77, 79-81, 85 88, 93, 99, 133, 134, 185, 348
Penn, Admiral Sir William.....	11, 15
Pennypacker, Governor Samuel W.....	40 66-69, 74, 188
Perry, Commodore Oliver Hazard.....	198
Pershing, Judge Cyrus L.....	146, 349
Pierson, Robert.....	195
Piper, Conrad.....	195
Pitcairn, Robert.....	330
Pitt, Sir William.....	5, 258, 259
Ploekhoy, Peter Cornelius.....	30
Pontiac, (Indian chief).....	106, 259
Poor, H. V.....	203
Pope, Thomas.....	249
Porter, Governor David R.....	191, 337
Post, Christian Frederick.....	107, 258
Potts, Colonel.....	218
Potts, Judge James.....	253
Potts, Joseph D.....	329
Potts, Jr., Thomas.....	185
Probst, John.....	194
Proud, Robert (historian).....	93
Prowell, George R. (historian).....	127, 164
Putnam, General Rufus.....	77

Q.

Quay, Matthew Stanley.....	121, 342-348
----------------------------	--------------

R.

Randall, Samuel J.....	4, 344
Raymond, Philander.....	205
Read, Thomas Buchanan.....	4
Ream, Norman B.....	340
Reed, Thomas B.....	321
Reese, Jacob.....	223
Rhoads, Samuel (Mayor of Phila.).....	134
Rhoads, Samuel N.....	74, 89, 96, 99
Rhorer, Frederick.....	300
Richards, Earl & Co.....	195
Richards Family.....	297
Richards, Matthias.....	296
Ridgely, Edward.....	188
Ringwalt, J. L.....	103, 111, 112 114, 131, 134, 142
Ritner, Governor Joseph.....	39, 341, 350
Rittenhouse, Benjamin.....	132
Rittenhouse, David.....	28, 132, 133, 188
Rittinghuysen, Willem.....	28
Roberts, George B.....	111
Roberts, Solomon W.....	143-145, 166
Robinson & Minis.....	129
Robinson, Moncure.....	167
Roebing, John Augustus.....	251-254
Roebing, Washington A.....	251, 252
Rogers & Burchfield.....	236
Rogers, H. D.....	81
Roosevelt, Nicholas J.....	125
Roosevelt, Theodore.....	125, 350
Ross, James.....	312, 349
Roup, Colonel Jonas.....	198
Rupp, Israel Daniel (historian).....	49, 103, 307
Rush, Dr. Benjamin.....	4, 105
Rutledge, George.....	146
Rutter, Thomas.....	185, 186

S.	Page	Page	
Sagard, (French historian).....	234	Tilghman, Judge William 4, 338	
St. Clair, General Arthur	194, 298-311	Tompkins, Daniel D.....	125
St. Clair, Daniel.....	309	Toucey, Isaac.....	340
St. Clair, Sir John.....	107	Townsend (Robert) & Co.....	196
Schoolcraft, Henry R. (historian).....	97	Trent, Captain William.....	256, 257
Schwenkfeld, Casper.....	32	Trimble, Thomas.....	108, 109
Scott, Joseph (geographer).....	197	Truman & Co.....	193
Scott, Thomas A.....	329, 330	Trumbull, John (artist).....	292
Sellers, John.....	132	Tuper & McCowan.....	199
Shaler, Judge Charles.....	349, 351	Turnbull & Marmie.....	191
Sharpless, Isaac (historian)....	56, 70, 72, 73	Turner, Joseph.....	216, 217
Sherman, General William T....	308, 328	Turner, Robert.....	22, 23
Shippen, Jr., Joseph.....	303	Tyler, John.....	337, 349, 350
Shoenberger, Dr. Peter.....	200, 206		
Shulze, Rev. Christopher E.....	295	V.	
Shulze, Governor John A. 39, 295, 296, 314		Van Buren, Martin.....	293, 294, 341, 350
Shunk, Governor Francis R.....	39, 294	Van Voorhis, Dr. J. S.....	90
Simons, Menno.....	27	Veech, Judge James.....	256, 315, 349
Simpson, Hannah.....	3	Vickroy, Joseph.....	195
Singer, Nimiek & Co.....	232		
Smith, Charles E.....	167-169	W.	
Smith, Colonel James.....	96	Wall, J. S. (geologist).....	120
Smith, James.....	2	Warrels or Worrells, Richard.....	66, 67
Smith, Dr. Joseph (historian).....	118	Washington, Augustine and Lawrence	255
Smith, Joseph.....	198	Washington, George... 5, 43, 47, 96, 97, 109	
Smith, Dr. William.....	132, 133	110, 120, 237, 255, 256, 257, 261, 262	
Smith, William Henry (historian)	298, 299	290, 291, 292, 296, 304, 305, 307, 309	
Snowden, John M.....	194	310, 312, 320, 350	
Snyder, Governor Simon.....	39, 58, 350	Watson, Rev. Dr. John.....	34
Spang, Chalfant & Co.....	237	Watson, John F. (historian).....	79, 101
Speicher, William H.....	113	Wayne, General Anthony.....	260
Stanton, Edwin M. 327-329 338, 340, 349		305, 308, 350	
Stanwix, General John.....	258	Weaver (Henry) & Son.....	194
Steel (James) & Co.....	150	Webb, Davis & Gardner.....	126
Stephenson & Co.....	163	Weiser, Conrad.....	290
Stephenson, George.....	156	Wellman, Samuel T.....	233
Stevens, Robert L.....	164	Wells, David A.....	334
Stevenson, David.....	145	Wetherill, Samuel.....	241, 242
Stewart, Andrew.....	313, 349	Wharton, Joseph.....	241, 242
Stitt, Ephraim.....	145	White & Hazard.....	250
Stockton, Rev. Joseph.....	349	White, Bishop.....	295
Stone, Witmer.....	89	White (John) & Co.....	150
Storey, H. W. (historian).....	145, 146	White, Peter.....	245
Stowell, (historian).....	234	Whitney, J. D.....	81
Stratton, W. A.....	150	Whitney, Silas.....	158
Sullivan, General John.....	304, 305	Whittlesey, Elisha.....	310
Swaine, Francis.....	296	Wilkins, Judge William.....	349
Swisshelm, Jane Grey.....	349	Williams, Joseph.....	341
		Williams, Ralph D.....	220, 245
		Wilson, Henry.....	340
T.		Wilson, Judge James.....	4, 338
Taafe & O'Connor.....	152	Wilson, W. Hasell.....	163, 164
Talmage & Raymond.....	243	Winslow, Griswold & Holley.....	209
Tanner, Henry S. (historian).....	133	Wolf, Governor George.....	39, 350
Tarascon Brothers and Burthoud....	120	Wolfe, General James.....	298
Tarascon Brothers & Co.....	123	Wollenweber, Louis August (historian)	93
Tarbell, Ida M.....	349	Wood (Alan) & Sons.....	242
Taylor, Bayard.....	4, 318	Woolman, John.....	69
Taylor, Joseph.....	217		
Thaw, William.....	151	Y.	
Thomas, David.....	230	Yoder, Captain Jacob.....	118
Thomas, Gabriel (historian).....	24, 27, 99	York, James, Duke of.....	11, 12, 14
Thomas, Sir George (Colonial Governor)	35	20, 30, 37, 54	
Thomas, General George H.....	328		
Thomas, Sidney Gilchrist.....	215	Z.	
Thompson, Jacob.....	340	Zeisberger, Rev. David.....	97, 234
Tilden, Samuel J.....	338	Zinzendorf, Count Nicholas Louis....	32

